दिल्ली विश्वविद्यालय
University of Delhi

परिषद शाखा - II, कमरा नं: 211, नया प्रशासनिक खंड, दिल्ली विश्वविद्यालय, दिल्ली-110007, दूरभाष: 011-27001156/54
Council Branch - II, Room No. 211, New Administrative Block, University of Delhi, Delhi – 110007, Ph: 27001156/54

CNC-II/093/1/EC-1282/26/7(iii)
Dated: 16.09.2026

NOTIFICATION

Sub: Amendment to Ordinance V

(ECR 4-1-4/ dated 29.04.2026)

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

Add the following:

The syllabi of following Department under the Faculty of Science based on Postgraduate Curriculum Framework 2024 are notified herewith for the information of all concerned:

DEPARTMENT	SYLLABI
Home Science	(i) One year M.Sc. Human Development and Childhood Studies for Semester I/II (Research Track) – **Annexure-1** (ii) One year M.Sc. Human Development and Childhood Studies for Semester I/II (Coursework) - **Annexure-2** (iii) One year M.Sc. Human Development and Childhood Studies for Semester I/II (Coursework + Research Track) - **Annexure-3**
	(i) One year M.Sc. Development Communication and Extension for Semester I/II (Research Track) - **Annexure-4** (ii) One year M.Sc. Development Communication and Extension for Semester I/II (Coursework) - **Annexure-5** (iii) One year M.Sc. Development Communication and Extension for Semester I/II (Coursework + Research Track) - **Annexure-6**
	(i) One-year M.Sc. Fabric and Apparel Science for Semester I/II (Research Track)– **Annexure-7** (ii) One year M.Sc. Fabric and Apparel Science for Semester I/II (Coursework) - **Annexure-8** (iii) One year M.Sc. Fabric and Apparel Science for Semester I/II (Coursework + Research Track) - **Annexure-9**
	(i) One year M.Sc. Resource Management and Design Application for Semester I/II (Research Track) - **Annexure-10** (ii) One year M.Sc. Resource Management and Design Application for Semester I/II (Coursework)- **Annexure-11** (iii) One year M.Sc. Resource Management and Design Application for Semester I/II (Coursework + Research Track) - **Annexure-12**
	(i) One year M.Sc. Food and Nutrition for Semester I/II (Research Track) - **Annexure-13** (ii) One year M.Sc. Food and Nutrition for Semester I/II (Coursework) - **Annexure-14** (iii) One year M.Sc. Food and Nutrition for Semester I/II (Coursework + Research Track)- **Annexure-15.**

16/9/26

REGISTRAR

Annexure-1

UNIVERSITY OF DELHI

Department of Home Science

Faculty of Science

1- Year MSc Human Development & Childhood Studies

Research Track Only

Department of Home Science

University of Delhi

Course Credit Structure NEP 2025

The Department of Home Science offers a Master's Programme in Human Development and Childhood Studies, focusing on understanding human development across the lifespan within a culturally diverse, dynamic, and complex world. The programme adopts contextual and systemic frameworks to explore developmental and relational processes through research, teaching, and practical engagement.

With a strong commitment to interdisciplinary learning, the curriculum integrates classroom instruction with meaningful field visit experiences. It places particular emphasis on recognising and studying the heterogeneity of children and adults across diverse social, cultural, and institutional settings.

Program Specific Objectives:

- To study the domains of human development from a lifespan perspective.
- To examine the interaction between the child and the socio-cultural systems, including educational settings.
- To promote competence in scientific study, research in the field, and the use of relevant assessment measures for children.
- To develop sensitivity and skills in working with children and families.
- To acquire a working knowledge of counselling children and families.
- To plan and implement programmes for children.
- To create awareness about children and families living in difficult circumstances.
- To provide students with a situated career exposure through internships and placements.

Program Specific Outcomes:

- The students will learn strategies for effective capacity building, implementation and assessment of early childhood education and development programmes.
- Students will learn support and advocacy skills for Gender Justice, Child Rights, Inclusion, and Adoption, which will help students to gain a professional advantage.
- Students will learn to interpret and discuss current research trends related to children's evolving interactions with media.
- Students will engage with the diversity and plurality of childhood in India and gain knowledge of the status of children in India.
- Students will acquire skills to critically analyse the concerns related to specific groups and will understand the processes and principles of 'rights-based programming'.

- Students will apply resilience frameworks and theoretical perspectives to understand child behaviour in diverse contexts.
- Students will examine and analyse the significance of children's social and ecological contexts, study the approaches and practices for inclusion and empowerment of children and families.
- Students will develop a holistic understanding of the educational ecosystem, processes and practices with reference to traditional knowledge and belief systems that have shaped parenting in India.

1 Yr- M.Sc. Human Development and Childhood Studies

RESEARCH ONLY

Course Credit Scheme

Program Structure-3: M.Sc. Only Research

Semester	**Core Courses**		**Elective Course**		**Research Methodology**		**Project work**		**Total Credits**
	No. of courses	**Total credits**	No. of Courses	**Total credits**	No. of courses	Total credits	No. of courses	Total credits	
I	1	4	1	4	2	4	1	10	22
II	-	-	1	4	1	2	1	16	22
Total Credits for the course	4		8		6		26		44

List of PGCF Courses of M.Sc. Human Development and Childhood Studies
(Semester 1 and II of the One Year program)
RESEARCH ONLY

List of Courses to be offered to students opting for Structure-3 (Only Research) of M.Sc. in 1st and 2nd Semester of One year Course							
Semester I							
Type of Course	**Type**	**Semester**	**Name of the Courses**	**Credits in each course**			
				Lecture	**Tutorial**	**Practical**	**Total**
Discipline-Specific Core course	**DSC-1**	**I**	**Methodological Approaches to Human Development and Childhood Studies**	**2**	**0**	**2**	**4**
Discipline-Specific Elective course	**DSE**	**I**	**Statistics and Data Management/ Research and Practices in Developmental Disabilities**	**As per the specific course**			**4**
Advanced Research Methodology	**ARM-I**	**I**	**Advanced Research Methodology**	**2**	**0**	**0**	**2**
Tools for Research	**TR-I**	**I**	**Tools for Research**	**2**	**0**	**0**	**2**
Dissertation/Project/Entrepreneurship	**IP-1**	**I**	**Research project**	**0**	**0**	**10**	**10**
Semester II							
Discipline-Specific Elective course	**DSE**	**II**	**Research and Practices in Early Childhood Care and Education**	**As per the specific course**			**4**
Techniques of Research Writing	**TRW**	**II**	**Techniques of Research Writing**	**2**	**0**	**0**	**2**
Dissertation/Project/ Entrepreneurship	**IP-2**	**II**	**Research project**	**0**	**0**	**16**	**16**
Pool of Discipline Specific Elective Courses to be offered in the 1st semester	**i. Statistics and Data Management** **ii. Research and Practices in Developmental Disabilities**						
Pool of Discipline Specific Elective Courses to be offered in the 2nd semester	**Research and Practices in Early Childhood Care and Education**						

Semester I

DISCIPLINE SPECIFIC CORE COURSE
METHODOLOGICAL APPROACHES TO HUMAN DEVELOPMENT AND CHILDHOOD STUDIES

CREDIT DISTRIBUTION, ELIGIBLITY AND PRE REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Methodological Approaches to Human Development and Childhood Studies	**4**	**2**	**0**	**2**	**As per admission norms**	**Nil**

Learning Objectives

- The present course is designed to provide an advanced understanding of research methodologies within the framework of Human Development and Childhood Studies.
- It further aims to promote an interdisciplinary approach to the study of the lifespan.
- The course seeks to familiarize students with key anthropological and sociological research tools and their application across lifespan studies.

Learning Outcomes

Students will be able to:

- Explore advanced concepts, tools, and approaches to data collection and analysis within the broad spectrum of the social sciences.
- Enhance their critical thinking, analytical writing, and evaluative skills.
- Evaluate and adapt appropriate research designs, methodologies, and techniques within an interdisciplinary framework.

THEORY
(Credit 2; Hours 30)

UNIT I: Interdisciplinary Nature of lifespan Research **6 Hours**

This unit introduces the interdisciplinary nature of social science research and its relevance to human development. It also covers empirical research and multidisciplinary approaches to studying children.

- Philosophy of Social Science Research; intersection of sociology, psychology, and anthropology etc.
- Introduction to empirical research and Human Development Indices
- Multidisciplinary approaches to the study of children

UNIT II: Formulating a Research Design **8 Hours**

This unit focuses on the process of designing a research study, including identifying problems, framing objectives, and selecting appropriate methods. It also emphasizes methodological decision-making, limitations, and reflexivity in real-life research contexts.

- Contextualising the study and defining the research problem
- Designing scope, objectives and framing research questions
- Formulation and testing of hypotheses; sources of data and methods of data collection
- Method selection in real-life research contexts
- Methodological limitations and reflexivity

UNIT III: Fieldwork Methods and Techniques **9 Hours**

This unit focuses on qualitative and participatory research methods, including ethnography and child-centred approaches. It also addresses ethical considerations and practical challenges in conducting fieldwork.

- Meaning, scope, and comparative understanding of ethnography with other qualitative methods
- Life history, oral narratives and focussed group discussion
- Research *with* children vs *on* children; Participatory methods with children (e.g., play-based methods, child interviews)
- Participatory rural appraisal techniques
- Ethics and challenges in fieldwork

UNIT IV: Social Science Research Tools and Scope of Lifespan Studies **7 Hours**

This unit focuses on basic approaches to data analysis and key research tools used in lifespan studies. It also highlights the application of these tools in community and institutional research contexts.

- Basic data analysis approaches (thematic analysis, descriptive statistics)
- Content analysis
- Longitudinal studies
- Research tools in community and institutional contexts

PRACTICAL

(Credit 2; Hours 60)

- To explore and analyse secondary data using an existing dataset (e.g. From NSSO, World Bank dataset, NDAP etc.) and prepare a detailed analytic report.
- To select a book relevant to the course and write a critical review**,** focusing on its methodological and conceptual contributions.
- To collect and analyse 10–15 newspaper articles, magazine articles, or social media posts, examining themes related to human development and childhood studies.
- To undertake short-term fieldwork in a village, slum, urban neighbourhood, institution, or community, and maintain a field diary with detailed observation notes.
- To analyse case-based ethical dilemmas in research with children and suggest appropriate strategies to ensure informed consent, confidentiality, and sensitivity.
- To plan, organise, and conduct a focus group discussion and/or oral life histories with selected community members, followed by analysis of findings.
- To prepare and present a research proposal on an identified theme related to human development, incorporating appropriate methodology.

Essential Readings

UNIT I: Interdisciplinary Nature of lifespan Research

- Chambers, R. (2003). The best of both worlds. In R. Kanbur (Ed.), *Q-Squared: Qualitative and quantitative poverty appraisal* (pp. 34–45). Delhi: Permanent Black.
- Devi, O.H. (2016). Childhood Experiences and Discourses: An Interpretation. In Marak, Q. (Eds.), *Doing Autoethnography* (pp. 250-267). New Delhi: Serials Publications.
- Hammet, D., Twyman, C. and Graham, M. (2015): *Research and Field Work in Development, Routledge*. New York.

UNIT II: Formulating a Research Design

- Bell, J. (2014). *Doing your research project: A guide for first-time researchers (Fifth ed.)*. Maidenhead, Berkshire: Open University Press.
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches* (3rd ed.). Los Angeles: Sage
- Jennings, M. (2006). Using Archives. In V. Desai, & R. B. Potter (Eds.), *Doing Development Research* (pp. 241-250)
- Sharma, S. (1992). Social Science Research in India: A Review. *Economic and Political Weekly*, 27 (49/50), 2642-2646.

- Srivastava, V. K. (ed.) (2004). *Methodology and Field Work*. New Delhi: OUP.

UNIT III: Fieldwork Methods and Techniques

- Hammersley, M. and Atkinson, P. (**1983)**. *Ethnography: Principles in Practice.* Tavistock Publications. London
- Kothari, U. (2001). Power, Knowledge and Social Control in Participatory Development. In Bill C. and Uma K. (Eds.), *Participation: The New Tyranny?* (pp.139–52) 1st ed. London: Zed Books.
- Srinivas, M.N. (1976): *Remembered Village*, Oxford, New Delhi

UNIT IV: Social Science Research Tools and Scope of Lifespan Studies

- Babbie, E. (2020). *The practice of social research (15th ed.)*. Cengage Learning.
- Bryman, A. (2021). *Social research methods (6th ed.)*. Oxford University Press.
- Fowler Jr., F.J. (2022). *Survey research methods (6th ed.)*. SAGE Publications.

Suggested Readings

- Beatty, P. C. (2018). *Advances in questionnaire design, development, evaluation and testing*. John Wiley & Sons.
- DeWalt, K. M. & DeWalt, B.R. (2011). *Participant Observation: A Guide for Fieldworkers*. Rowman & Littlefield Publishers, Inc. USA
- Emerson, R. M., Fretz, R. I. & Shaw, L. L. (2011). *Writing Ethnographic Fieldnotes*. University of Chicago Press. USA
- Lohr, S. L. (2019). *Sampling: Design and analysis (2nd ed.)*. Chapman and Hall/CRC.

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

RESEARCH METHODS STATISTICS AND DATA MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBLITY AND PRE REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Statistics and Data Management	**4**	**3**	**0**	**1**	**As per admission norms**	

Learning Objectives

- To develop understanding of fundamental and advanced statistical concepts used in research and data analysis.
- To enable students to apply descriptive and inferential statistics for real-world decision-making.
- To strengthen ability to formulate hypotheses, select appropriate statistical tests, and interpret outputs.
- To prepare students for quantitative research, industry analytics, and academic data projects.
- To train students in using Excel and SPSS for data handling, visualization, and interpretation.

Learning Outcomes

The students would be able to:

- Explain key concepts in descriptive and inferential statistics.
- Organize, clean, and summarize datasets using appropriate statistical tools.
- Apply probability distributions, correlation, regression, and hypothesis testing.
- Use Excel and SPSS for data visualization, statistical testing, and reporting.
- Interpret statistical outputs and draw valid conclusions for research decisions.
- Design and execute quantitative data analysis workflows independently.

THEORY

(Credits 3; Hours 45)

UNIT I: Introduction and descriptive Statistics — 12 Hours

This unit will introduce the foundations of statistics and techniques for summarizing and describing data.

- Definition, scope, and applications of statistics
- Types of data: qualitative and quantitative
- Scales of measurement
- Classification & tabulation of data
- Graphical and visual representations
- Measures of central tendency: mean, median, mode
- Measures of dispersion: range, variance, standard deviation, coefficient of variation
- Skewness and kurtosis: meaning and interpretation

UNIT II: Probability and Probability Distributions 10 Hours

This unit explores probability concepts and major statistical distributions.

- Basic probability concepts: Addition & multiplication theorems
- Random variables: discrete and continuous
- Binomial and Normal distributions
- Sampling theory & sampling distributions
- Central Limit Theorem

UNIT III: Correlation and regression 8 Hours

This unit focuses on analysing relationships between variables.

- Correlation: Pearson and Spearman correlation
- Simple linear regression: model, estimation, interpretation
- Multiple linear regression: assumptions, multicollinearity, model building

UNIT IV: Hypothesis Testing and Non-Parametric Methods 15 Hours

This unit introduces hypothesis testing frameworks and non-parametric alternatives for non- normal data.

- Concept of hypothesis: null & alternative
- Types of errors, significance levels, p-value
- Parametric tests:
    - z-test
    - t-test (one sample, independent, paired)
    - Chi-square test
- Non-parametric tests:
    - Mann–Whitney U test
    - Wilcoxon signed-rank test
    - Kruskal–Wallis test
- Interpretation and reporting of statistical results

- Research Conclusion and recommendation

PRACTICAL

(Credits 1; 30 hours)

1. Data Entry, Coding & Cleaning: Importing data, handling missing values, variable labels, Excel formulas.
2. Descriptive Statistics & Visualization: Mean, Standard Deviation, frequency tables, histograms, boxplots (Excel + SPSS).
3. Cross-Tabulation & Chi-Square Test: PivotTables in Excel; Crosstabs in SPSS.
4. Correlation Analysis: Pearson & Spearman correlations; scatterplots.
5. Simple Linear Regression: Trendline in Excel; Regression output in SPSS.
6. Multiple Regression: Model summary, coefficients, interpretation using SPSS.
7. t-Tests: Independent, paired, and one-sample t-tests in SPSS.
8. ANOVA (One-way & Two-way): Running ANOVA and post-hoc analysis.
9. Non-Parametric Tests: Mann-Whitney, Wilcoxon, Kruskal–Wallis in SPSS.
10. Report Generation & Interpretation
11. Preparing APA-style tables, graphs, and interpretations in Excel/SPSS.

Essential Readings:

UNIT I

This unit describes the foundations of statistics and techniques for summarizing and describing data.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.). Pearson Prentice Hall.
- Bernard, H. R. (2000). *Social research methods: Qualitative and quantitative approaches*. Sage.
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.). CreateSpace Independent Publishing Platform.
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*. Wiley.

UNIT II

This unit deals with the probability concepts, rules of probability, discrete and continuous distributions (Binomial, Poisson, Normal).

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*.

UNIT III

This unit focuses on relationship between variables, correlation coefficients, simple and multiple regression, regression assumptions.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Muijs, D. (2004). *Doing quantitative research in education with SPSS*. Sage.

UNIT IV

The unit deals with statistical inference such as t-tests, ANOVA, Chi-square, non-parametric tests (Mann-Whitney, Wilcoxon, Kruskal-Wallis), decision making.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*.
- Muijs, D. (2004). *Doing quantitative research in education with SPSS*.

Suggested Readings

- Field, A. (2025). *Discovering Statistics Using IBM SPSS Statistics* (6th ed.). Sage.
- Kalyanaraman, K., Ramanathan, H. N., & Harikumar, P. N. (2025). *Statistical Methods for Research: A Step-by-Step Approach Using IBM SPSS*. Atlantic Publishers.
- Healey, J. F., & Donoghue, C. (2021). *Statistics: A Tool for Social Research and Data Analysis* (11th ed.).

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

DISCIPLINE SPECIFIC ELECTIVE

RESEARCH AND PRACTICES IN DEVELOPMENTAL DISABILITIES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Research And Practices in Developmental Disabilities	4	2	0	2	As per admission norms	Nil

Learning Objectives:

- To build a strong understanding of theoretical foundations, ethical principles and diverse research methodologies relevant to developmental disabilities.
- To develop the ability to critically analyse assessment tools, intervention models and statistical techniques used in the study of developmental disabilities.
- To enable students to design and conduct culturally relevant and evidence-based research in the field of developmental disabilities.
- To prepare students to apply research findings for policy development, professional practice and academic advancement.

Learning Outcome:

Students will be able to:

- Demonstrate advanced knowledge of theoretical frameworks, ethical guidelines and research methodologies in the field of developmental disabilities.
- Critically evaluate assessment tools, intervention models and statistical techniques used in research on developmental disabilities.
- Design and implement culturally relevant, evidence-based research studies related to developmental disabilities.
- Effectively translate research findings into policy recommendations, professional practices and academic contributions.

THEORY

(Credit 2; Hours 30)

UNIT I: Overview of Research in Developmental Disabilities 7 Hours

This unit focuses on foundation in developmental disabilities research, examining historical evolution, theoretical frameworks, and ethical considerations in working with vulnerable populations.

- History and evolution of Developmental Disabilities (DD) research
- Perspectives of developmental disabilities in research
- Theoretical frameworks guiding DD research
- Ethics and considerations in DD research
- Priorities and gaps in the field of developmental disabilities research

UNIT II: Research Methodology in Developmental Disabilities 8 Hours

This unit focuses on research methodology in developmental disabilities, emphasizing study design, sampling and evaluation of culturally relevant assessment tools.

- Techniques for assessment: Developmental screening tools
- Qualitative vs quantitative and longitudinal vs cross-sectional research designs used in DD studies
- Review of research designs in published papers
- Indian cultural and contextual considerations in DD research

UNIT III: Intervention Research in Developmental Disabilities 8 Hours

This unit focuses on evidence-based practices and interventions in developmental disabilities, focusing on evaluating models and designing frameworks for early intervention and family-centered programs.

- Research on early intervention, family-centered intervention and inclusive education
- Notions of evidence-based practices (EBP) in DD
- Behavioral, cognitive-behavioral, developmental, educational, rehabilitation-based intervention models
- Institutional services and evaluation methods in DD
- Connecting scientific findings to practice and policy

UNIT **IV: Advanced Contemporary Methods in Developmental Disabilities Research 7 Hours**

This unit focuses on contemporary issues in developmental disabilities, emphasizing data analysis, interpretation, and policy review for informed research and practice.

- Advanced contemporary methods used in DD research: Thematic, content, narrative analysis
- Assistive technologies, digital data collection, AI tools in DD research
- Policy driven research in developmental disabilities
- Applications of research findings in therapeutic settings
- Ethical reporting and dissemination in DD research

PRACTICAL

(Credit 2; Hour 60)

- To critically analyze a peer-reviewed research study/ Departmental dissertations on disability and inclusion.
- Observation and documentation of motor skills, cognition, communication, social interaction, play behaviour and adaptive skills of a child with disability.
- To review mobile applications- Pre-Assessment Holistic Screening Tool (PRASHAST) and Ped Neuro AIIMS Diagnostics. Report on its accessibility, utility, assessment techniques and validity
- To conduct a short research study by visiting any one working in the area of disability, focusing on systematic observation of IEP, assessment reports, daily practices, services, and skill development
- To study five published articles which will guide future research focusing on key ethical concerns, risks, and safeguarding practices for the inclusion of children/persons with disability
- Prepare case study of a child/adolescent with disability through multiple field visits using IEP, observations, stakeholder interviews, diagnosis and assessment reports.

Essential Readings

UNIT **I: Overview of Research in Developmental Disabilities**

- Kumar, S. (2014). *Handbook of disability studies in India*. Atlantic Publishers.
- Nair, M. K. C., & Radhakrishnan, R. (2013). *Child development and developmental disorders*. Orient Blackswan.
- Kumar, A., & Gupta, S. (2018). *Disability, inclusion and development: Indian perspectives*. Rawat Publications.
- Odom, S. L., Horner, R. H., Snell, M. E., & Blacher, J. (2007). *Handbook of developmental disabilities*. Guilford Press.

UNIT II: Research Methodology in Developmental Disabilities

- Forshaw, M., Upton, D., & Jones, S. (2011). *Psychology Express: Research methods in psychology* (1st ed.). Pearson.
- Mertens, D. M. (2015). *Research and evaluation in education and psychology: Integrating diversity with quantitative, qualitative, and mixed methods* (4th ed.). SAGE Publications

UNIT III: Intervention Research in Developmental Disabilities

- Pandey, R., & Singh, M. (2020). *Educational research: Tools and techniques*. APH Publishing Corporation.
- Singh, A. (2016). *Research methods in psychology*. Pearson India.
- Odom, S. L., Boyd, B. A., Hall, L. J., & Hume, K. (2010). Evaluation of comprehensive treatment models for individuals with autism spectrum disorders. *Journal of autism and developmental disorders*, *40*(4), 425–436. https://doi.org/10.1007/s10803-009-0825-1

UNIT IV: Advanced Cotemporary Methods in Developmental Disabilities Research

- SAP SE. (2024). *The inclusive research handbook*. SAP. https://www.sap.com/design/stories-resources/inclusive-research-handbook
- Mayers, A. (2013). *Introduction to statistics and SPSS in psychology*. Pearson.
- Silverman, D. (2021). *Qualitative research* (5th ed.). SAGE Publications.

Suggested Readings

- Kar, B. R. (2015). *Cognitive development: A cultural and contextual approach*. Sage Publications.
- Mukhopadhyay, R. (2019). *Understanding disability: Theoretical and empirical perspectives*. Rawat Publications.
- Narayan, J., & John, A. (2017). *Intellectual disability in India: Challenges and practices*. NIMH Publications.
- Sharma, U., & Deppeler, J. (Eds.). (2018). *Inclusive education: Perspectives and practices in India*. Sage Publications India.
- Dash, M. (2016). *Education of children with special needs*. Atlantic Publishers.

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

ADVANCED RESEARCH METHODOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre- requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Advanced Research Methodology	2	2	0	0	As per admission criteria	Should have studied Basic Research Methodology and Statistics

Learning Objectives

- Construct a theoretical framework for diverse research problems.
- Compare and contrast the design elements of experimental, quasi-experimental, and non-experimental studies.
- Formulate appropriate research questions for a mixed-methods design.

Learning Outcomes

After completing the course, students will be able to:

- Design complex research projects, including mixed-methods and longitudinal studies, appropriate for advanced academic inquiry.
- Determine the internal and external validity of research designs.
- Evaluate and justify the selection of advanced sampling techniques.

THEORY
(Credits 2; Hours 30)

UNIT I: Theoretical Foundation of Research Design and Sampling. 12 Hours

This unit covers the theoretical foundation of research designs, issues of internal and external validity, advanced literature review techniques including systematic reviews and meta- analysis, and approaches to theory building through inductive, deductive, and abductive reasoning. The unit also discusses sophisticated sampling techniques, sample size determination, and sources of sampling error, enabling learners to design rigorous and generalizable research studies.

- Types of research designs and internal external validity perspectives
- Literature Review Approaches: Systematic Review, Meta Analysis, scoping review and others
- Theory Building and testing in qualitative and quantitative researches
- Sampling Frameworks and strategy, Sample size calculation and error
- Advanced Quantitative Sampling Techniques: Stratified Cluster Sampling, Multi-Stage Sampling, Adaptive Sampling and other techniques.
- Sampling in qualitative research: Techniques and issues of depth, context and data saturation

UNIT II: Quantitative, Qualitative and Mixed Methods Research Design. 18 Hours

This unit focuses on the different types of research designs including, advanced quantitative research designs, key qualitative research methodologies and mixed-methods research designs and strategies for integrating qualitative and quantitative data.

- Quantitative Research Design
  - Advanced Experimental Designs: RCT Designs, Factorial designs, Repeated Measures (within-subjects),
  - Longitudinal Studies: Panel, Cohort, and Trend designs
  - Cross-Sectional: Survey and other quantitative designs.
- Qualitative Methodologies
  - Aspects of robust Qualitative research designs.
  - Iteration, Data Triangulation, Saturation and Reflexivity in qualitative research
  - Ethnographic Research, Case Study Research, Narrative Inquiry
  - Action and Participatory Researches: philosophical and methodological perspectives

- Mixed-Methods Design
  - Convergent Parallel, Explanatory Sequential, Exploratory Sequential designs; Notation systems (e.g., QUAL to QUAN)
  - Integration and Mixing: Strategies for data mixing, synthesis, and developing a unified interpretation.

Essential Readings

UNIT I

This unit introduces the perspectives that guide advanced research practices. Students will study different types of research designs, key issues of validity, advanced literature review methods, and approaches to theory development. The unit also covers details of sampling for research. The unit aims to strengthen students' conceptual clarity and ability to link theory, methodology, and research questions in scholarly inquiry.

- Black, J. A., & Champion, D. J. (1976). *Methods and issues in social research*. John Wiley & Sons
- Burns, Robert, B. (2000) *Introduction to Research Methods*(4th ed.,chaps8-10, 20-22, 29,30). Sage Publications
- Kothari, C.R., Garg, Gaurav (2023) *Research Methodology: Methods and Techniques*
- (5th ed.) New Age International Publishers
- Mandlik, D., Kalkar, P., Singh C. (2025) *Advanced Research Methodologies and Practices*. Taylor & Francis.
- Mallik, R., Kurian, M., Prajapati, V., Pithadia, M. (2023) *Advanced Research Methodology*. AG Publishing House
- Neuman, W. Laurence (2008) Social Research Methods: Qualitative and Quantitative Approaches (6th ed., chaps3-5) Pearson Education

UNIT II

This unit focuses on advanced quantitative research designs including experimental, longitudinal, and cross-sectional designs. Emphasis is placed on understanding complex experimental structures and multivariate approaches. Through this unit, students will also develop an understanding of advanced qualitative research approaches such as ethnographic, case study, narrative, and participatory research designs, focusing on their key features and applications. The unit will further

discuss mixed-methods research designs that integrate quantitative and qualitative approaches. Students will examine different mixed-methods designs and strategies for integrating data during analysis and interpretation.

- Baumeister, M., Kropf, S., & Pöpper, C. (2022). Quantile-based MANOVA: A new tool for inferring multivariate data in factorial designs. *arXiv preprint arXiv:2211.15484*. https://doi.org/10.48550/arXiv.2211.15484
- Black, J. A., & Champion, D. J. (1976). *Methods and issues in social research*. John Wiley & Sons
- Burns, Robert, B. (2000) *Introduction to Research Methods*(4th ed.,chaps8-10, 20-22, 29,30). Sage Publications
- Caruana, E. J., Roman, M., Hernández-Sánchez, J., & Solli, P. (2015). Longitudinal studies. *Journal of Thoracic Disease*, *7*(11), E537–E540. https://doi.org/10.3978/j.issn.2072-1439.2015.10.63
- Creswell, J. W., & Creswell, J. D. (2023). *Research design: Qualitative, quantitative, and mixed methods approaches* (6th ed.). SAGE Publications, Inc.
- Denzin, N. K., Lincoln, Y. S., Giardina, M. D., & Cannella, G. S. (Eds.). (2024). *The SAGE handbook of qualitative research* (6th ed.). SAGE Publications
- Kerlinger, F. N. (1973). *Foundations of Behavioral research* (2nd ed., chaps 7,8, 17-26). Holt, Rinehart, and Winston.
- Kothari, C.R., Garg, Gaurav (2023) *Research Methodology: Methods and Techniques* (5th ed.) New Age International Publishers
- Luthfiandana, R., Santioso, L. L., Febrian, W. D., Soehaditama, J. P., & Sani, I. (2024). Qualitative research concepts: Phenomenology, grounded theory, ethnography, case study, narrative. *Scientia Journal of Applied Management*, *2*(1), 26–36. https://doi.org/10.38035/sjam
- Minc, S. D., Chandanabhumma, P. P., Sedney, C. L., Haggerty, T. S., Davidov, D. M., & Pollini, R. A. (2022). Mixed methods research: A primer for the vascular surgeon. *Seminars in Vascular Surgery*, *35*(4), 447–455. https://doi.org/10.1053/j.semvascsurg.2022.09.003
- Neuman, W. Laurence (2008) Social Research Methods: Qualitative and Quantitative Approaches (6th ed., chap 13) Pearson Education
- Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in implementation research. *Administration and Policy in Mental Health and Mental Health Services Research*, *42*(5), 533–544. https://doi.org/10.1007/s10488-013-0528- y

Suggested Readings

- Dagher, D., & Khan, M. (2025). Writing a systematic review and meta-analysis: A step-by-step guide. *Sports Health*, *17*(5), 885–890. https://doi.org/10.1177/19417381251364686
- M. E. R. (2020). Methodological integrity in critical qualitative research. *The Counseling Psychologist*, *48*(6), 848–874. https://doi.org/10.1177/0011000020950348
- Findley, M. G., & Faten, A. (2024). Vulnerability in research ethics: A call for assessing vulnerability and implementing protections. *Proceedings of the National Academy of Sciences*, *121*(11), https://doi.org/10.1073/pnas.2322821121

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

TOOLS FOR RESEARCH

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Tools for Research	2	2	0	0	As per admission criteria	Nil

Learning Objectives

- Design and evaluate quantitative and qualitative tools.
- Understand data processing and effectively utilize common statistical packages.
- Apply coding techniques, and utilize digital platforms and AI in research design and analysis.

Learning Outcomes

After completing the course, students will be able to:

- Differentiate between major quantitative and qualitative tools.
- Demonstrate proficiency in data entry, coding and cleaning.
- Utilize digital platforms and AI effectively in the formulation, administration, and data collection.
- Proficiently utilize specialized software for qualitative data analysis and quantitative statistical testing.

THEORY
(Credits 2; Hours 30)

UNIT I: Quantitative Tools, Data Coding and Analysis **15 Hours**

This unit introduces quantitative research tools, including questionnaires and rating scales, and the principles of their development, reliability, and validity. It covers major rating scales and key steps in scale construction, analysis, and standardization, along with the use of digital platforms and AI for tool development and administration. This unit also focuses on quantitative data coding, entry, and cleaning using statistical software. It introduces variable definition, handling of missing data, basic automation through spreadsheet and open-source tools, and familiarization with commonly used statistical software for data management and analysis.

- Quantitative measurement, Variables and construct definition
- Quantitative tool development: Questionnaire, Semi-Structured Interview Schedules.
- Rating Scales Types and Development Process: Item Generation and Content Validation, Item Analysis, Internal Consistency and Factor Analysis, Scale Refinement and Standardization.
- Coding styles and Approaches.
- Assessment of Reliability and Validity of quantitative Tools.
- Data Coding, Entry and Cleaning (Statistical Software): Handling missing data (listwise/pairwise deletion).
- Automation and Data Scripting: Advance excel, other open-source software for data import/export.
- Statistical Software Usage: Navigating common statistical packages

- Leveraging Digital Tools and AI for enhancing the Research lifecycle: Tool Formulation, Data collection and Analysis

UNIT II: Qualitative Tools, Data Coding and Analysis 15 Hours

This unit introduces major qualitative research tools and their application in research. It covers the development and validation of qualitative tools, descriptive and thematic coding techniques, and the use of digital platforms and AI for qualitative data collection and analysis. This unit further focuses on qualitative data coding and analysis using qualitative data analysis software. It introduces the interface and use of QDAS for importing, coding, cleaning, and managing text, audio, and video data, along with an overview of NVivo, ATLAS.ti, and other open-source tools.

- Qualitative tools: In-Depth Interview, Focus Group Discussion, Case Study, Observation, Diaries, Oral Narratives/Stories and others.
- Participatory tools : Types, characteristics and usage in qualitative and participatory researches.
- Developing Qualitative Tools: Tool selection and development, pilot testing and refinement.
- Validity of Qualitative Tools: Qualitative vs. Quantitative Validity, Methods for establishing validity for qualitative tools.
- Coding Techniques: Descriptive and thematic coding
- Digital Platforms and AI for development of qualitative tools and data analysis.
- Qualitative Data Analysis Software (QDAS) Interface: Importing, coding and cleaning different data types (text, audio, video)
- Overview of NVivo, ATLAS.ti and other open-source QDAS software

Essential Readings

UNIT I

This unit aims to build an understanding of quantitative tools used for the purpose of data collection. The unit introduces various types of quantitative data tools, their development and assessment of their reliability and validity. This unit further introduces various rating scales and their development, validation and standardisation. The unit also includes the learning of coding and analysis of quantitative data, basics of data processing scripts and common statistical packages

- Creswell, J. W., & Creswell, J. D. (2023). *Research design: Qualitative, quantitative, and mixed methods approaches* (6th ed.). SAGE Publications.
- Cheema, J. R. (2014). Using listwise deletion to cope with missing data: A cautionary note. *Journal of Educational and Developmental Psychology, 4*(1), 127–134.
- Ghasemi, A., & Zahediasl, S. (2012). Normality tests for statistical analysis. *International Journal of Endocrinology and Metabolism, 10*(2), 486–489.
- Gotschall, T., & Gotschall, T. (2018). EndNote, Mendeley, RefWorks, Zotero: A comparative review. *Journal of Electronic Resources in Medical Libraries, 15*(1), 1–18.
- Hausner, E. T., & Hirt, S. J. (2020). Improving reproducibility in academic data-intensive research through computational workflows. *Frontiers in Research Metrics and Analytics, 5*(7).
- Johnson, R., & Witsel, M. (2018). ORCID: A necessary piece of infrastructure for global research evaluation. *Frontiers in Research Metrics and Analytics, 3*(28).

UNIT II

This unit introduces various types of qualitative tools used in research, their development, pilot testing and refinement. The unit also introduces techniques of establishing validity and of such qualitative tools of data collection. This section also discusses prominent digital and AI tools for qualitative research and provides an overview of qualitative data coding and analysis software.

- Allsop, D. B., Chelladurai, J. M., Kimball, E. R., Marks, L. D., & Hendricks, J. J. (2022). Qualitative methods with NVivo software: A practical guide for analyzing qualitative data. Psych, 4(2), 142–159.
- Al-Kassimi, M., & Al-Sharqi, A. (2020). Data visualization techniques: Model and taxonomy. International Journal of Research in Engineering and Science, 8(3), 44–53.
- Creswell, J. W., & Creswell, J. D. (2023). *Research design: Qualitative, quantitative, and mixed methods approaches* (6th ed.). SAGE Publications.
- Gotschall, T., & Gotschall, T. (2018). EndNote, Mendeley, RefWorks, Zotero: A comparative review. *Journal of Electronic Resources in Medical Libraries, 15*(1), 1–18.
- Johnson, R., & Witsel, M. (2018). ORCID: A necessary piece of infrastructure for global research evaluation. *Frontiers in Research Metrics and Analytics, 3*(28).
- Provalis Research. (n.d.). QDA Miner: Qualitative Data Analysis Software. Retrieved from https://provalisresearch.com/products/qualitative-data-analysis-software/
- Urban Institute. (2025). Urban Institute Data Visualization Style Guide. Retrieved from http://urbaninstitute.github.io/graphics-styleguide/
- Weninger, M. (2024). Open coding in qualitative research: A systematic review and guide. *ResearchGate* (preprint).

Suggested Readings:

- Kang, H. (2013). The prevention and handling of the missing data. *Korean Journal of Anesthesiology, 64*(5), 402–406.
- Kery, M., & Myers, M. (2020). Improving reproducibility in academic data-intensive research through computational workflows. *Frontiers in Research Metrics and Analytics, 5*(7).
- Saravanakumar, A. P., & Shitharth, S. (2023). A survey on sentiment analysis: Techniques, algorithms, and application areas. *Journal of King Saud University – Computer and Information Sciences, 35*(3).
- Takes, F. W. (2024). Gephi tutorial for graph/network visualization. Retrieved from https://github.com/franktakes/gephi-tutorial

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

Semester II

DISCIPLINE SPECIFIC ELECTIVE
RESEARCH AND PRACTICES IN EARLY CHILDHOOD CARE AND EDUCATION

CREDIT DISTRIBUTION, ELIGIBLITY AND PRE REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Research and Practices in Early Childhood Care and Education	4	2	0	2	As per admission norms	Nil

Learning Objectives

- To build a strong understanding of theoretical foundations, ethical principles and diverse research methodologies in Early Childhood Care and Education (ECCE)
- To develop the ability to critically analyse assessment tools, intervention models and statistical techniques used in early childhood research.
- To enable students to design and conduct culturally relevant, evidence-based studies in ECCE settings.
- To prepare students to apply research findings for policy formulation, professional practice and academic growth.

Learning Outcomes

The students will be able to:

- Demonstrate advanced knowledge of theoretical frameworks, ethical standards and research methodologies in Early Childhood Care and Education.
- Critically evaluate assessment tools, intervention models and statistical techniques used in early childhood research.
- Design and implement culturally relevant, evidence-based research studies in ECCE.
- Translate research findings into policy recommendations, professional practices and academic contributions.

THEORY

(Credit 2; Hours 30)

UNIT I: Foundations of Research in Early Childhood Care and Education 6 Hours
This unit focus on to provide foundation in Early Childhood Care and Education (ECCE) research, covering theoretical, historical, and ethical principles while identifying gaps for future scholarly inquiry.

- Concept and scope of Early Childhood Care and Education (ECCE) in research
- Historical perspectives and evolution of ECCE research

- Key theoretical frameworks guiding ECCE research
- Ethical principles and considerations in ECCE research (informed consent, assent, vulnerability)
- Research gaps and priorities in the field of ECCE

UNIT II: Research Methods and Processes in Early Childhood Care and Education 8 Hours

This unit offers a brief introduction to research methods in ECCE and how information about young children is collected and understood. It emphasizes simple tools and ethical practices to improve early childhood programmes and teaching.

- Types of research designs used in ECCE studies (Qualitative VS quantitative, Longitudinal vs cross-sectional designs)
- Sampling in ECCE research (small samples, clinical samples, community-based samples)
- Tools and techniques for assessment: Developmental screening tools
- Reliability and validity issues specific to ECCE population
- Cultural and contextual considerations in Indian ECCE research

UNIT III: Evidence-Based Practices & Intervention Research 8 Hours

This unit focuses on evidence-based practices and intervention research in ECCE, enabling critical evaluation and application of developmentally appropriate methods in real-world settings.

- Concepts of evidence-based practice (EBP) in ECCE
- Evaluation of intervention models: Behavioral, cognitive-behavioural, developmental, educational-based
- Research on early intervention and family-centred intervention
- Program evaluation methods in ECCE services
- Translational research: connecting scientific findings to practice and policy

UNIT IV: Contemporary Issues, Data Analysis & Dissemination 8 Hours

This unit focuses on addressing contemporary issues in ECCE research, focusing on data analysis, ethical dissemination, evidence-based evaluation, and professional development for effective practice.

- Advanced methods used in ECCE research: Thematic, content, narrative analysis
- Use of technology in ECCE research: Assistive technologies, digital data collection, AI tools
- Policy-oriented research in ECCE
- Dissemination of research findings
- Ethical reporting and avoiding bias in ECCE research

PRACTICAL

(Credit 2; Hours 60)

- Review and critique departmental dissertations/ research studies in ECCE
- Early Childhood Education Quality Assessment Scale (ECEQAS), Early Childhood Environment Rating Scale (ECERS-3), Infant/Toddler Environment Rating Scale (ITERS-3). Usage and reflections on strengths, limitations, adaptability and contextual variability of these tools
- Field visit to ECCE centres catering to different ecological settings and conduct systematic observations focusing on infrastructure, learning spaces, play material, pedagogy, teacher-child and peer interactions
- Conduct an ethnographic study of a child's development in different domains to study influence of demographics, caregiving practices and daily routines on development
- Prepare one ECCE assessment module and review different approaches used in ECCE monitoring and evaluation
- Review and critically analyse ECCE framework and policies using secondary data. Reflect on goals, alignment with child development theories, implementation challenges and implications for ECCE practitioners

Essential Readings

UNIT I: Foundations of Research in Early Childhood Care and Education

- Punch, K. & Oancea, A. (2020). *Introduction to Research Methods in Education*. Sage Publications.
- Aggarwal, J. & Sabharwal, V. (2025). *Essentials of research methodology: A practical manual.* Elite Publishing House.
- Kothari, C. R., & Garg, G. (2023). *Research methodology: Methods and techniques*. New Age International Pvt Ltd.

UNIT II: Research Methods and Processes in Early Childhood Care and Education

- Mukherjee, D. & Banerjee, S. (2021). *Research Methods in Early Childhood Education*. Sage Publications India.
- Bernard, H. R. (2000). *Social research methods: Qualitative and quantitative approaches.* Sage.
- Creswell, J. & Creswell, D. (2018). *Research design: Qualitative, quantitative and mixed methods approaches.* Sage Publications.

Unit III: Evidence-Based Practices & Intervention Research

- Silverman, D. (2020). *Qualitative research* (5th ed.). SAGE Publications.
- UGC. (2021). *Academic integrity and research quality*. https://sushantuniversity.edu.in/admin-assets/uploaddata/UGC-Booklet-on-Academic-Integrity-and-Research-Quality.pdf

UNIT IV: Contemporary Issues, Data Analysis & Dissemination

- Fleer, M. (2021). *Play in the early years: Research and practice.* Cambridge University Press.
- Gonzalez-Mena, J. (2015). *Foundations of early childhood education: Teaching children in a diverse society*. McGraw-Hill Education.
- Jain, S., & Raghunathan, R. (2019). *Inclusive approaches to early childhood education in India: Policy frameworks and implementation*. Sage Publications.

Suggested Readings

- CBPS. (2018, March). Research studies on ECCE - recommendations and policy directions for ECCE in India: lessons drawn from the three research reports on ECCE. Bengaluru: Centre for Budget and Policy Studies.
- Gopalan, M., & Sinha, R. (2014). *Childhood education in India: Policy, practice, and global trends*. Oxford University Press.
- Rao, N. & Sun, J. (2020). *Early Childhood Education in Asia: Research*. Policy and Practice. Routledge.
- Kumar, R. (2019). *Research methodology: A step-by-step guide for beginners (5th ed.).* Sage Publications.

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

TECHNIQUES OF RESEARCH WRITING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course
		Lecture	Tutorial	Practical		
Techniques of Research Writing	2	2	0	0	As per admission policy	Should have studied Advanced Research Methodology and Tools for Research

Learning Objectives

- Comprehend and apply principles of academic writing for research
- Understand the concept of plagiarism and adopt strategies to avoid plagiarism.
- Learn and use different citation styles and effectively utilize reference management tools.
- Outline the process of writing, publishing, and presenting research.
- Avoid common errors in academic writing.

Learning Outcomes

After completing the course, students will be able to:

- Structure and organize major scholarly works according to disciplinary standards.
- Master the principles of academic writing and non-plagiaristic expression.
- Employ visualization techniques to effectively communicate complex research findings and data patterns.
- Apply citation styles and formatting requirements meticulously to produce publication-ready manuscripts.

THEORY
(Credits 2; Hours 30)

UNIT I: The Foundations and Structure of a Research Manuscript 18 Hours

This unit covers the essentials of clear, concise, and formal academic writing, ethical practices including plagiarism avoidance, effective idea organization, and responsible use of AI tools in research. This unit also guides students through crafting a complete research manuscript, including introduction, methodology, results, discussion, and conclusions, with emphasis on accurate data presentation, visualization, and proper manuscript formatting.

- Academic Writing principles and organization of ideas
- Plagiarism types, use of plagiarism-checking software & interpretation of

plagiarism reports.

- Academic writing frameworks: IMRAD (Introduction, Methods, Results, Discussions) Structure and the TEEC (Topic sentence, Evidence, Explanation, Conclusion) Structure
- Ethical use of AI in academic writing
- Data Visualization: Principles, Types and Tools

UNIT II: Citation, Reference Management, Publication and Presentation of Research 12 Hours

The unit focuses on mastering citation styles, managing references using software tools, and conducting efficient literature searches using databases and advanced search strategies. The unit further explores journal selection, ethical publishing practices, research paper writing, and the creation and delivery of effective presentations and posters for diverse academic audiences.

- Citation Management & formatting guidelines: Detailed application of specific styles (e.g., APA 7th, MLA, Chicago, Vancouver), managing in-text citations, citation index.
- Reference Management Software (RMS): Zotero, Mendeley and other citation tools; searching specialized databases (e.g., Scopus, Web of Science, ScienceDirect);
- Databases and Search Strategy- Key search terms, Boolean operators, PRISMA diagram
- Types and Selection of Journals: Predatory journals, Cloned journals; Open access and Paid Journals; Impact Factor and other metrics of Journals
- Research Paper writing and publishing in peer-reviewed journals, understanding journal-specific guidelines.
- Formulating and Presenting a Research Poster
- Presentation Skills: Creating effective slides, summarizing complex findings for different audiences, and managing Q&A sessions.

Essential Readings:

UNIT 1

This unit introduces the essential principles of scholarly writing required for academic research. It focuses on developing clarity, precision, and coherence in written work while maintaining an appropriate academic tone. This unit also familiarizes students with accurate citation practices and systematic reference management in academic writing. Further, the unit covers the correct presentation of tables, figures, and overall manuscript formatting in line with journal and institutional requirements. Students will gain practical skills necessary for producing professionally structured research documents.

- American Psychological Association. (2020). *Plagiarism* (7th ed.). APA Style. https://apastyle.apa.org/style-grammar-guidelines/citations/plagiarism
- American Psychological Association. (2020). *Sample tables* (7th ed.). APA Style. https://apastyle.apa.org/style-grammar-guidelines/tables- figures/sample-tables

- American Psychological Association. (2023). *Citing generative AI in APA Style: Part 1—Reference formats*. APA Style Blog. https://apastyle.apa.org/blog/cite-generative-ai-references
- Thomas, C. George (2021) Research Methodology and Scientific Writing (2nd ed.) Springer Nature

UNIT II

This unit focuses on the organization and presentation of a complete research report/document. Students will learn how to write each section of a research manuscript clearly and logically. The unit focusses on the processes involved in publishing and presenting research work. It covers the selection of appropriate journals, awareness of unethical publishing practices, the basics of writing for peer-reviewed publications, effective research presentation skills, including poster preparation and oral presentations

- American Psychological Association. (2020). *Response to reviewers* (7th ed.). APA Style. https://apastyle.apa.org/style-grammar-guidelines/research-publication/response-reviewers
- American Psychological Association. (2020). *Heading levels* (7th ed.). APA Style. https://apastyle.apa.org/style-grammar-guidelines/paper- format/heading-levels
- Hamilton College. (n.d.). *How to write an APA research paper*. https://www.hamilton.edu/academics/centers/writing/writing-resources/how-to-write- an-apa-research-paper
- Montclair State University. (2021). *How to prepare your dissertation in APA Style*. https://www.montclair.edu/graduate/wp-content/uploads/sites/58/2021/01/DISSERTATION-GUIDELINES-FOR-APA-STYLE -1-2021.pdf
- Tullu, M. S., & Karande, S. (2017). *Writing a model research paper: A roadmap*. *Journal of Postgraduate Medicine*, *63*(3), 143–146. https://doi.org/10.4103/jpgm.JPGM_325_17

Suggested Readings:

- AME Publishing Company. (2022). *Discussion and conclusion*. https://cdn.amegroups.cn/journals/vats/files/journals/27/articles/4955/public/4955-PB1-8866-R1.pdf?filename=amj-04-26.pdf
- McLeod, S. (2023). *How to write a methods section for a psychology paper*. Very well Mind. https://www.verywellmind.com/how-to-write-a-method- section-2795726

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

Annexure-2

UNIVERSITY OF DELHI

Department of Home Science

Faculty of Science

1-year M. Sc. Human Development & Childhood Studies

Coursework Track

Department of Home Science

University of Delhi

Course Credit Structure- NEP

2025

The Department of Home Science offers a Master's Programme in Human Development and Childhood Studies, focusing on understanding human development across the lifespan within a culturally diverse, dynamic, and complex world. The programme adopts contextual and systemic frameworks to explore developmental and relational processes through research, teaching, and practical engagement.

With a strong commitment to interdisciplinary learning, the curriculum integrates classroom instruction with meaningful field visit experiences. It places particular emphasis on recognising and studying the heterogeneity of children and adults across diverse social, cultural, and institutional settings.

Program Specific Objectives:

- To study the domains of human development from a lifespan perspective.
- To examine the interaction between the child and the socio-cultural systems, including educational settings.
- To promote competence in scientific study, research in the field, and the use of relevant assessment measures for children.
- To develop sensitivity and skills in working with children and families.
- To acquire a working knowledge of counselling children and families.
- To plan and implement programmes for children.
- To create awareness about children and families living in difficult circumstances.
- To provide students with a situated career exposure through internships and placements.

Program Specific Outcomes:

- The students will learn strategies for effective capacity building, implementation and assessment of early childhood education and development programmes.
- Students will learn support and advocacy skills for Gender Justice, Child Rights, Inclusion, and Adoption, which will help students to gain a professional advantage.
- Students will learn to interpret and discuss current research trends related to children's evolving interactions with media.
- Students will engage with the diversity and plurality of childhood in India and gain knowledge of the status of children in India.
- Students will acquire skills to critically analyse the concerns related to specific groups and will understand the processes and principles of 'rights-based programming'.
- Students will apply resilience frameworks and theoretical perspectives to understand child behaviour in diverse contexts.

- Students will examine and analyse the significance of children's social and ecological contexts, study the approaches and practices for inclusion and empowerment of children and families.
- Students will develop a holistic understanding of the educational ecosystem, processes and practices with reference to traditional knowledge and belief systems that have shaped parenting in India.

Course Credit Structure NEP 2025

DEPARTMENT OF HUMAN DEVELOPMENT AND CHILDHOOD STUDIES

1-Year MSc Curriculum under NEP

COURSEWORK ONLY TRACK

1 Yr- M.Sc. Human Development and Childhood Studies

COURSEWORK ONLY

Course Credit Scheme

Program Structure-1: M.Sc. Only Coursework

Semester	Core Courses		Elective Course		Skill-Based Courses		Total Credits
	No. of courses	Total credits	No. of courses	Total credits	No. of courses	Total credits	
I	2	8	3	12	1	2	22
II	2	8	3	12	1	2	22
Total Credits for the course	16		24		4		44

List of PGCF Courses of M.Sc. Human Development and Childhood Studies (Semester I and II of the One-year Program): COURSEWORK

Type of Course	Type	Semester	Name of the Courses	Credits in each course			
				Lecture	Tutorial	Practical	Total
Semester – I							
Discipline Specific Core Course	DSC-1	I	Children and Media	2	0	2	4
Discipline Specific Core Course	DSC-2	I	Fundamentals of Mental Health in Childhood	3	1	0	4
Discipline Specific Elective Course	DSE	I	Statistics and Data Management/ Gender, Justice and Empowerment/ Care and Wellbeing Across Lifespan	As per the specific course			4x3=12
Generic Elective Course (*Can be opted in for place of 1 DSE course)	GE-1	I	From the pool	4	0	0	4
Skill Based Course	SBC-1	I	From the Pool of SBCs given below*	0	0	2	2
Semester -II							
Discipline Specific Core Course	DSC-3	II	Child Development and Indian Knowledge Systems	2	0	2	4
Discipline Specific Core Course	DSC-4	II	Language and Cognition in Development Studies	3	1	0	4
Discipline Specific Elective Course	DSE	II	Organization and Management of Programmes for Adults/ Sociology of Family and Community Care/ Childhood and Adolescence Across Ecological Settings	As per the specific course			4x3=12
Generic Elective Course (*Can be opted in for place of 1 DSE course)	GE- 2	II	From the Pool of GEs	As per the specific course			4
Skill Based Course	SEC-2	II	From the Pool of SBCs given below*	0	0	2	2
Pool of Discipline Specific Elective Courses to be offered in 1st	**i. Statistics and Data Management**						
	ii. Gender, Justice and Empowerment						
	iii. Care and Wellbeing Across Lifespan						

Pool of Discipline Specific Elective Courses to be offered 2nd Semester**	**iv.**	**Organization and Management of Programmes for Adults**
	v.	**Sociology of Family and Community Care**
	vi.	**Childhood and Adolescence Across Ecological Settings**
Pool of General Elective Courses offered by the Department of Home Science	**i.**	**Parenting in contemporary India**
	ii.	**Resources and Sustainability**
	iii.	**Organizational Communication: Tools and Techniques**
	iv.	**Lifestyle Modifications for Optimal Health**
	v.	**Community Nutrition Assessment**
	vi.	**Dyeing and printing with Natural Dyes**
	vii.	**Appreciation of Indian Textiles**
Pool of Skill Based Courses (Odd Semester)	**i.**	**Content Development for ECCE**
	ii.	**Resource Development for Disability and Inclusion**
	iii.	**Research Informed Practices in Early Childhood Care and Education**
	iv.	**Participatory Learning Methodology and its Applications in Human Development**
Pool of Skill-Based Courses (Even Semester)	**v.**	**Working with vulnerable families and the community**
	vi.	**Parenting and Early Intervention**
	vii.	**Research Informed Practices in Developmental Disabilities**

Semester I

DISCIPLINE SPECIFIC CORE COURSE

CHILDREN AND MEDIA

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Children and Media	4	2	0	2	As per admission norms	Nil

Learning Objectives:

- To understand the changing representations of childhood in media
- To critique media content and analyse its underlying messages
- To examine the relationship between media and children's experiences and development
- To explore research trends on children's evolving engagement with media

Learning Outcomes:

Students will be able to-

- Identify and explain how representations of childhood have changed across different media forms.
- Evaluate media content and articulate its implicit messages, biases, and stereotypes.
- Analyse the influence of media on children's behaviour, identity formation, and everyday experiences.
- Interpret and discuss current research trends related to children's evolving interactions with media.

THEORY

(Credits 2; Hours 30)

UNIT I: Different forms of media with reference to children 6 Hours

This unit introduces the different forms of media that children engage with in their daily lives, including print, electronic, and digital platforms.

- Children's use and benefit from print forms
- Radio and its extensive outreach
- Television medium and its significance in a changing world
- Folk forms of media such as puppetry, drama and art
- Stories, their relevance and changing contexts

UNIT II: Content, age-related understanding and comprehension 8 Hours

This unit focuses on how media shapes and supports children's cognitive growth by examining how different types of content engage their attention and stimulate thinking.

- Linking children's thinking skills to media
- Identifying materials that engage children's attention
- Analysis of content in relation to appeal for children
- Balancing entertainment with the need for information and stimulation
- Media literacy

UNIT III: Children in media 8 Hours

This unit focuses on how children are portrayed and utilized within media, highlighting the implications of these representations on their development.

- Children's social presence and notions of childhood in media
- Critical review of using children in media settings in relation to age appropriateness, social significance, stereotypes, etc.
- Awareness and understanding of the influences of the culture of media on the growth and development of child participants
- Identify components of a media policy and law for children; Protecting children's feelings, emotions and privacy in the world of media, social media and AI

UNIT IV: Special features for creating content for children's media 8 Hours

This unit focuses on the critical aspects of designing meaningful and inclusive media content for children, grounded in research and understanding of their perceptions.

- Research issues in developing content for children
- Children's perceptions as viewers; Children's sense of identification with media images and self
- Identifying the significance of issues such as plurality, gender stereotypes, coexistence of multiple cultures, abilities and age typing
- Role of formative and summative research in media

PRACTICAL

(Credits 2; Hours 60)

- To systematically study children's media usage patterns, modes of interaction, and responses to various forms of media, and to identify children's perspectives using appropriate qualitative and quantitative research tools.
- To critically review, analyze, and document educational media designed for children, with reference to age-appropriateness, pedagogical value, and developmental relevance.
- To undertake a field visit to a media house and document the processes involved in the development of children's media content, including ideation, scripting, production, and dissemination.

- To develop competencies in understanding the principles and methodologies of formative research, including its conduct and application in informing scriptwriting and media production for children.
- To conduct a structured survey to assess parental and community perceptions regarding children's media exposure and consumption, and to formulate evidence-based recommendations based on the findings.
- To prepare a detailed analytical report evaluating children's television programmes using normative features of physical, cognitive, social, and emotional growth and development as review criteria.

Essential Readings

UNIT I: Different forms of media with reference to children

- Drotner, K. & Livingstone, S. (Eds.). (2008). *International handbook of children, media and culture.* Sage
- Menon, S., & Rao, S. (Eds.). (2020). *Children's books: An Indian story*. Parag Initiative, Tata Trusts.
- Prakash, S. & Mathur, P. (2000). *Children and TV.* NCERT.

UNIT II: Content, age-related understanding and comprehension

- Singer D.G. & Jerome L. (2012). *Handbook of children and media.* Sage.
- Rao, S. (2022). *Introduction to media literacy*. SAGE Publications India.
- Olson, D. & Rampaul, G. (2013). *The Routledge international handbook of children, adolescents and media*. Routledge.
- Kakar, S. (2012). *The inner world: A psycho-analytic study of childhood and society in India* (4th ed.). Oxford University Press.

UNIT III: Children in media

- Lemish, D. (2015). *Children and Media: A Global Perspective*. Wiley Blackwell.
- Banaji, S. (2017). *Children and media in India: Narratives of class, agency and social change*. Routledge.
- Raman, U., & Kasturi, S. (Eds.). (2023). *Childscape, mediascape: Children and media in India*. Orient BlackSwan.

UNIT IV: Special features for creating content for children's media

- Brennan, B. (2012). *Qualitative research methods for media studies*. Taylor & Francis.
- Holland, P. (2004). *Picturing childhood: The myth of the child in popular imagery*. I.B. Tauris.

Suggested Readings

- Livingstone, S. (2002). *Young people and new media.* Sage.
- Nightingale, A. (2024). *Screen time and children: Guidelines for parents and educators*. Creative Quill Press.
- Livingstone, S. (2009). *Children and the internet: Great expectation, challenging realities.* Polity Press

- Arumugam, C. T., Said, M. A., & Nik Farid, N. D. (2021). Screen-based media and young children: Review and recommendations. *Malaysian family physician : the official journal of the Academy of Family Physicians of Malaysia*, *16*(2), 7–13. https://doi.org/10.51866/rv1143
- Christakis, D.A. & Hale, L. (2025). Handbook of children and screens: Digital media, development and well-being from birth through adolescence. Springer Open.
- Molina, E. (2025). Balancing the Digital Scales: Screen Time Management in Early Childhood Education. In Digital Innovations in Education. World Bank.

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

DISCIPLINE SPECIFIC CORE COURSE

FUNDAMENTALS OF MENTAL HEALTH IN CHILDHOOD

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title and code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of Mental Health in Childhood	**4**	**3**	**1**	**0**	**As per admission norms**	**Nil**

Learning Objectives

- To introduce key concepts of childhood mental health and developmental psychopathology.
- To explain major theoretical approaches in understanding child behaviour.
- To examine childhood stress, trauma, maltreatment, and resilience-building within family and ecological systems.
- To develop an understanding of emerging issues such as digital mental health and the neurodiversity movement.
- To enable students to apply developmental and contextual frameworks to analyse risk, protection, adaptation, and pathways in childhood.

Learning Outcomes

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

- Define and explain childhood mental health concepts, developmental psychopathology principles, and cultural influences.
- Differentiate between normal and abnormal behaviour using theoretical, developmental and contextual criteria.
- Identify and analyse risk factors, protective factors, and the impact of trauma, stress, and family environment on child development.
- Apply resilience frameworks and theoretical perspectives to understand child behaviour in diverse contexts.
- Evaluate emerging trends such as digital mental health and neurodiversity, and discuss their implications for practice and inclusion.

THEORY

(Credits 3; Hours 45)

Unit 1: Introduction to Childhood Mental Health **12 Hours**

- Definition of mental health and well-being in childhood
- Abnormal Behaviour in Children: (Competence, Developmental Pathways)
- Protective vs. risk factors
- Family context and mental health

Unit 2: Theoretical Perspectives **12 Hours**

- Developmental Psychopathology perspective
- Psychological perspective
- Family, Social and Cultural perspective
- Biomedical model, Cognitive Behavioural perspective

Unit 3: Childhood Stress, Trauma, and Resilience **12 Hours**

- Trauma and Stress
- Maltreatment, Abuse and Neglect
- Non-accidental trauma
- Building resilience in Children

Unit 4: Emerging Issues and Future Trends **9 Hours**

- Developmental Psychopathology in India
- Digital mental health for children
- Neurodiversity movement and inclusive practices
- Current global research directions

TUTORIAL

(Credits 1; Hours 15)

- Group Discussions
- Book Review
- Class Presentations
- Group Projects
- Media Analysis (Movies, documentaries, serials, songs, advertisements, social media
- posts)
- Any creative production (group activity)

Essential Readings

UNIT I: Introduction to Childhood Mental Health

- Laver-Bradbury, C., Thompson, M. J. J., Gale, C., & Hooper, C. M. (Eds.). (2021). *Child and adolescent mental health: Theory and practice* (3rd ed.). CRC Press.
- Kiragasur, R. M., Kommu, J. V., Kumar, C. N., Shetty, V. B., Parthasarathy, R., & Math, S. B. (2020). *Child and adolescent mental health: A manual for medical officers*. National Institute of Mental Health and Neuro Sciences (NIMHANS). https://nimhans.co.in/wp-content/uploads/2021/09/Child-and-Adolescent-Mental-Health_A-Manual-for-Medical-Officers.pdf

UNIT II: Theoretical Perspectives

- Cicchetti, D., & Cohen, D. J. (2006). *Developmental psychopathology: Theory and method* (2nd ed.). John Wiley & Sons.
- Kakar, S. (1981). *The inner world: A psycho-analytic study of childhood and society in India*. Oxford University Press.

UNIT III: Childhood Stress, Trauma and Resilience

- Kapur, M. (2011). *Counselling Children with Psychological Problems*. Pearson.
- Fraser, M. W., Kirby, L. D., & Smokowski, P. R. (2014). *Risk and resilience in childhood: An ecological perspective* (2nd ed.). NASW Press.
- Brewer-Smyth, K. (2022). *Adverse childhood experiences: The neuroscience of trauma, resilience and healing throughout life course*. Springer
- Herman, J.L. (1997). *Trauma and Recovery*. Hachette.
- Mash, E. J. & Wolfe, D.A. (2016). *Abnormal Child Psychology* (6th ed.). Cengage Learning.

UNIT IV: Emerging Issues and Future Trends

- Kapur. M. (1995). *Mental Health of Indian Children*. Sage.
- Chavan, B.S., Gupta, N., Arun, P., Sidana, A. & Jadhav, S. (2012*). Community Mental Health in India.* Jaypee.
- O'Reilly, M., Dogra, N., Levine, D., & Donso, V. (2024). *Digital media and child & adolescent mental health*. SAGE Publications Ltd.
- Shulman, C. (2016). *Research and practice in infant and early childhood mental health*. Springer Cham.

Suggested Readings

- Beck, U. (2011). *Risk society: Towards a new modernity.* SAGE.
- Masten, A. S. (2014). *Ordinary magic: Resilience in development.* Guilford Press.
- Patel, V., & Kleinman, A. (2019). *Mental health in low-resource settings: Challenges and solutions.* Cambridge University Press.
- Ungar, M. (2012). *The social ecology of resilience: A handbook of theory and practice*. Springer.
- Wilkinson, R., & Pickett, K. (2018). *The inner level: How more equal societies reduce stress, restore sanity, and improve everyone's well-being.* Penguin Books.
- Nicholson, J., Perez, L., Kurtz, J. Bryant, S. & Giles, D. (2023). *Trauma-informed practices for Early Childhood Educators.* Routledge.
- Sen, S. (2015). *All you need is love: The art of mindful parenting.* Harper Collins India.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

STATISTICS AND DATA MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Statistics And Data Management	**4**	**3**	**0**	**1**	As per admission norms	**Nil**

Learning Objectives

- To develop understanding of fundamental and advanced statistical concepts used in research and data analysis.
- To enable students to apply descriptive and inferential statistics for real-world decision-making.
- To strengthen ability to formulate hypotheses, select appropriate statistical tests, and interpret outputs.
- To prepare students for quantitative research, industry analytics, and academic data projects.
- To train students in using Excel and SPSS for data handling, visualization, and interpretation.

Learning Outcomes

The students would be able to:

- Explain key concepts in descriptive and inferential statistics.
- Organize, clean, and summarize datasets using appropriate statistical tools.
- Apply probability distributions, correlation, regression, and hypothesis testing.
- Use Excel and SPSS for data visualization, statistical testing, and reporting.
- Interpret statistical outputs and draw valid conclusions for research decisions.
- Design and execute quantitative data analysis workflows independently.

THEORY

(Credits 3; Hours 45)

UNIT I: Introduction and descriptive Statistics **12 Hours**

This unit will introduce the foundations of statistics and techniques for summarizing and describing data.

- Definition, scope, and applications of statistics
- Types of data: qualitative and quantitative
- Scales of measurement
- Classification & tabulation of data
- Graphical and visual representations
- Measures of central tendency: mean, median, mode
- Measures of dispersion: range, variance, standard deviation, coefficient of variation
- Skewness and kurtosis: meaning and interpretation

UNIT II: Probability and Probability Distributions 10 Hours

This unit explores probability concepts and major statistical distributions.

- Basic probability concepts: Addition & multiplication theorems
- Random variables: discrete and continuous
- Binomial and Normal distributions
- Sampling theory & sampling distributions
- Central Limit Theorem

UNIT III: Correlation and regression 8 Hours

This unit focuses on analysing relationships between variables.

- Correlation: Pearson and Spearman correlation
- Simple linear regression: model, estimation, interpretation
- Multiple linear regression: assumptions, multicollinearity, model building

UNIT IV: Hypothesis Testing and Non-Parametric Methods 15 Hours

This unit introduces hypothesis testing frameworks and non-parametric alternatives for non-normal data.

- Concept of hypothesis: null & alternative
- Types of errors, significance levels, p-value
- Parametric tests:
    - z-test
    - t-test (one sample, independent, paired)
    - Chi-square test
- Non-parametric tests:
    - Mann–Whitney U test
    - Wilcoxon signed-rank test
    - Kruskal–Wallis test
- Interpretation and reporting of statistical results

- Research Conclusion and recommendation

PRACTICAL

(Credits 1; Hours 30)

1. Data Entry, Coding & Cleaning: Importing data, handling missing values, variable labels, Excel formulas.
2. Descriptive Statistics & Visualization: Mean, Standard Deviation, frequency tables, histograms, boxplots (Excel + SPSS).
3. Cross-Tabulation & Chi-Square Test: PivotTables in Excel; Crosstabs in SPSS.
4. Correlation Analysis: Pearson & Spearman correlations; scatterplots.
5. Simple Linear Regression: Trendline in Excel; Regression output in SPSS.
6. Multiple Regression: Model summary, coefficients, interpretation using SPSS.
7. t-Tests: Independent, paired, and one-sample t-tests in SPSS.
8. ANOVA (One-way & Two-way): Running ANOVA and post-hoc analysis.
9. Non-Parametric Tests: Mann-Whitney, Wilcoxon, Kruskal–Wallis in SPSS.
10. Report Generation & Interpretation
11. Preparing APA-style tables, graphs, and interpretations in Excel/SPSS.

Essential Readings:

UNIT I

This unit describes the foundations of statistics and techniques for summarizing and describing data.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.). Pearson Prentice Hall.
- Bernard, H. R. (2000). *Social research methods: Qualitative and quantitative approaches*. Sage.
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.). CreateSpace Independent Publishing Platform.
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*. Wiley.

UNIT II

This unit deals with the probability concepts, rules of probability, discrete and continuous distributions (Binomial, Poisson, Normal).

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*.

UNIT III

This unit focuses on relationship between variables, correlation coefficients, simple and multiple regression, regression assumptions.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Muijs, D. (2004). *Doing quantitative research in education with SPSS.* Sage.

UNIT IV

The unit deals with statistical inference such as t-tests, ANOVA, Chi-square, non-parametric tests (Mann-Whitney, Wilcoxon, Kruskal-Wallis), decision making.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*.
- Muijs, D. (2004). *Doing quantitative research in education with SPSS.*

Suggested Readings

- Field, A. (2025). *Discovering Statistics Using IBM SPSS Statistics* (6th ed.). Sage.
- Kalyanaraman, K., Ramanathan, H. N., & Harikumar, P. N. (2025). *Statistical Methods for Research: A Step-by-Step Approach Using IBM SPSS.* Atlantic Publishers.
- Healey, J. F., & Donoghue, C. (2021). *Statistics: A Tool for Social Research and Data Analysis* (11th ed.).

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

GENDER, JUSTICE AND EMPOWERMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Gender, Justice and Empowerment	4	2	0	2	As per admission norms	Nil

Learning Objectives:

- To develop an in-depth understanding of gender as a social construct and the frameworks of social justice and human rights.
- To critically examine legal, policy and institutional mechanisms that promote or hinder gender equality.
- To build analytical skills to evaluate the processes of empowerment, agency and development across diverse socio-cultural contexts.
- To enable students to apply gender-sensitive perspectives in addressing contemporary issues, designing interventions and advocating for gender justice.

Learning Outcomes:

Students will be able to:

- Demonstrate comprehensive knowledge of gender theories, social justice perspectives and structures influencing gendered experiences.
- Analyse legal provisions, policies and institutional practices related to gender equality and justice.
- Design and evaluate gender-responsive programmes, strategies and interventions for empowerment.
- Apply gender-sensitive, rights-based and intersectional perspectives in professional, community and policy contexts.

THEORY

(Credits 2; Hours 30)

UNIT I: Foundations of Gender and Social Justice **7 Hours**

This unit provides an understanding of the foundational concepts of gender and social justice, examining how identities and roles are shaped within social and cultural contexts.

- Conceptualizing gender, gender identity and intersectionality
- Feminist theories: liberal, radical, socialist, postmodern, Dalit feminist perspectives
- Social justice frameworks and human rights principles
- Structures of patriarchy and gendered power relations

UNIT II: Gender, Law and Policy Frameworks **7 Hours**

This unit focuses the legal and policy frameworks that promote gender equality, highlighting constitutional provisions, key legislations, international conventions, and policy strategies for gender inclusion and empowerment.

- Constitutional provisions related to gender equality in India
- Key legislations and gender
- International conventions and frameworks

UNIT III: Empowerment, Agency and Development **8 Hours**

This unit focuses on the concept of empowerment through gender-focused development frameworks, highlighting key enablers and community processes that promote agency and gender justice.

- Concept of empowerment
- Gender and development approaches: analysis of key theoretical frameworks that address gender inequalities
- Enablers of Gender Justice
- Community Processes for Justice and Empowerment

UNIT IV: Contemporary Issues and Strategies for Gender Justice **8 Hours**

This unit focuses on contemporary gender justice challenges and explores strategies ranging from advocacy to policy and media interventions to combat inequalities, violence, and emerging issues.

- Gender-based violence: forms, causes, prevention and redressal
- Gender and media, representation, social norms and stereotypes
- Gender in workplaces: discrimination, care labour, unpaid work, glass ceiling
- Emerging issues: gender diversity, gender and technology, cyber safety
- Advocacy, campaigns, and programme planning for gender just

PRACTICAL

(Credits 2; Hours 60)

- To conduct a survey with male and female participants, to study gender variations in roles and responsibilities shared at home
- Create a report containing the following items:
    - Any five news articles, illuminating contemporary issues relevant to gender studies
    - Key points from classroom discussions on relevance and influence of these issues among the students
- Analyse gender portrayals of a movie, videoclip or episode commonly viewed by the students. Reflect on the portrayals of masculinity, femininity, gender typing and gender stereotyping
- To design a workshop on gender stereotypes, gender neutral roles and gender equity
- Seminar/ Webinar or Field visit to NGO that provides legal aid, rehabilitation and skill development services

Essential Readings

UNIT I: Foundations of Gender and Social Justice

- Bhasin, K. (1993). *What is patriarchy?* Kali for Women, Raj Press.
- Bhasin, K. (2000). *Understanding gender.* Kali for Women, Raj Press.
- Bhasin, K. (1986). *Feminism and its relevance in South Asia*. Kali for Women, R. S. Printers.
- Bhasin, K. (2004). *Exploring masculinity*. New Delhi: Women Unlimited, Raj Press.

UNIT II: Gender, Law and Policy Frameworks

- Agnes, F. (1999). *Law and gender inequality: The politics of women's rights in india.* Oxford University Press.
- Supreme Court of India. (2023). *Handbook on combating gender stereotypes*; https://cdnbbsr.s3waas.gov.in/s3ec0490f1f4972d133619a60c30f3559e/uploads/2024/01/2024012544.pdf

UNIT III: Empowerment, Agency and Development

- Agosin, M. (2003). *Women, Gender and Human Rights: A Global Perspective* (1st ed.). Rawat.
- Bhatia, R. (2021). *Gender: A Sociological Understanding*. Pearson.
- Geetha, V. (2007). *Patriarchy*. Stree Publications.
- Kishwar, M. (1999*). Off the beaten track: Rethinking gender justice for Indian wome*n. Oxford University Press.
- Phadke, S., Khan, S., & Ranade, S. (2011). *Why loiter? Women and risk on Mumbai streets*. Penguin Books India.

UNIT IV: Contemporary Issues for Gender Justice

- Manjrekar, N. (2020). *Gender and education in India.* Akar Books.
- Singh, L., & Sinha, S. S. (Eds.). (2024). *Gender in modern India: History, culture, marginality*. Oxford University Press.
- Kumar, P. (Ed.). (2022). *Sexuality, abjection and queer existence in contemporary India*. Routledge India.
- Pande, R., & Vanka, S. (Eds.). (2020). *Gender violence: International perspectives*. IBP Books.
- Mohanty, M. (2008). *Class, caste and gender.* Sage.

Suggested Readings

- Fischer, A.H. (2000). *Gender and emotion: Social psychological perspectives*. Cambridge University Press.
- Biswal, T. (2006). Human rights, gender and environment. Viva Books.
- Mukhopadhyay, M. & Singh, N. (Eds.). (2007). *Gender, justice, citizenship and development.* Zubaan Publication.
- Irudayam, A., Mangubhai, F., & Lee, J. (Eds.). (2017). *Dalit women speak out: Caste, class and gender violence in India*. Zubaan Books.
- Vanita, R. (2005). *Love's rite: Same-sex marriage in India and the West*. Palgrave Macmillan.
- King, B.M. (2013). *Human Sexuality Today*. Pearson.
- Mehendale, A., & Raha, S. (2020, May). *Schools as safe spaces: An analysis of public narratives and policy actions in Bengaluru* (Working Paper, Education and the Urban in India). Perspectivia.net. https://perspectivia.net/servlets/MCRFileNodeServlet/pnet_derivate_00003998/Mehendale_Raha_final.pdf

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
CARE AND WELLBEING ACROSS LIFESPAN

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Prerequisite of the Course (if any)
		Lecture	Tutorial	Practical		
Care and Wellbeing Across Lifespan	4	2	0	2	As per admission norms	Nil

Learning Objectives

- To understand major theories and perspectives related to care and wellbeing across the lifespan in social and developmental contexts.
- To examine developmental needs, risk factors and transitions influencing wellbeing.
- To build skills for promoting wellbeing through counselling, supportive care and reflective practice.
- To understand policies, programmes, and institutional support systems related to care and wellbeing.

Learning Outcomes

The students will be able to:

- Describe key concepts and models of care, wellbeing and development.
- Identify life-stage needs and vulnerabilities across the lifespan.
- Use wellbeing tools and apply basic counselling-informed strategies.
- Review relevant policies and programmes related to care and wellbeing
- Prepare short intervention plans and reflective field-based reports.

THEORY

(Credits 2; Hours 30)

UNIT I: Care and Human Development **7 Hours**

This unit explains the concept of care, its relevance and the different settings in which care is required across the lifespan.

- Meaning, nature and dimensions of care
- Ethics of care and rational responsibility
- Care needs in disability, chronic illness and mental health concerns
- Forms of care: family and institutional settings

UNIT II: Well-being and Human Development **7 Hours**

This unit focuses on wellbeing, life transitions, and factors that influence wellbeing at different stages.

- Meaning and components of wellbeing: Psychological, emotional, social and spiritual
- Life transitions: Stress, loss and major developmental changes
- Models of wellbeing: (PERMA, psychological wellbeing and life satisfaction)
- Factors promoting wellbeing: Resilience, coping skills and social support

UNIT III: Care and Well-being, from Birth to Adolescence **8 Hours**

This unit focuses on the care needs and well-being concerns from pregnancy to adolescence.

- Prenatal, antenatal, maternal and neonatal care
- Care of infants and young children, including developmental risk
- Adolescent health and wellbeing: mental health, identity and peer relations
- School and community-based health and wellbeing programmes

UNIT IV: Care and Well-being in Adults and Elderly **8 Hours**

This unit explains wellbeing concerns in adulthood and ageing, including caregiving, health needs and support systems.

- Wellbeing needs in young adulthood, midlife and later adulthood
- Work–life balance, stress and burnout
- Elderly: physical, cognitive and emotional changes
- Support systems: counselling approaches, mindfulness, institutional and policy support

PRACTICAL

(Credits 2; Hours 60)

- To develop, administer, score, and interpret standardized wellbeing assessment tools, including the WHO Wellbeing Index, Psychological Wellbeing Scale, and Life Satisfaction Scale.
- To prepare a comprehensive case profile covering two distinct life stages, supported by relevant documentation on learning and development, and to undertake a reflective analysis of wellbeing-enhancing strategies employed or recommended.
- To engage in structured fieldwork through a visit to an old-age home, childcare centre, or community health programme, and to document observations related to care practices and wellbeing promotion.
- To design a brief, context-specific wellbeing promotion plan for a selected population group, grounded in theoretical frameworks and empirical evidence.
- To conceptualize, organize, and conduct a workshop or seminar aimed at strengthening participants' understanding of care, wellbeing, and supportive practices.

Essential Readings

UNIT I: Care and Human Development

- Carter, M. (Ed.). (2025). *The Bloomsbury handbook of care ethics*. Bloomsbury Academic.
- John, M., & Wichterich, C. (Eds.). (2021). *Who cares? Care extraction and the struggles of Indian health workers*. Yoda Press.
- Daleman & Helton (2018). *Chronic illness care: Principles and practice*. Springer.
- Ghai, A. (2015). *Rethinking Disability in India.* Routledge

UNIT II: Well-being and Human Development

- Masten, A. (2021). *Resilience in development: Discoveries and emerging frontiers.* Springer.
- Seligman, M. E. P. (2011). *Flourish.* Atria Publications
- Harvard Center on the Developing Child. (2020). *Building core capabilities for life*. Harvard University. https://developingchild.harvard.edu/resources/building-core-capabilities-for-life/

UNIT III: Care and Well-being, from Birth to Adolescence

- Humphreys, K. (2022). *Child development: Understanding risk and protective factors.* OUP.
- WHO. (2023). *World mental health report 2023: Transforming mental health for all.* https://www.who.int/publications/i/item/9789240049338

UNIT IV: Care and Well-being in Adults and Elderly

- Beard, J. et al. (2019). *Global Ageing Report: Healthy Ageing 2030.* WHO.
- Papalia, D. & Martorell, G. (2021). *Experience human development.* McGraw-Hill.
- Chao, R.C. (2015). *Counselling Psychology: An integrated positive psychology approach.* Wiley Blackwell.
- Chatterjee, P. (2019). *Health and wellbeing in late life: Perspectives and narratives from India*. Springer Open.

Suggested Readings

- Viner, R. M., Ozer, E. M., Denny, S., Marmot, M., Resnick, M., Fatusi, A., & Currie, C. (2012). Adolescence and the social determinants of health. *Lancet (London, England)*, *379*(9826), 1641–1652. https://doi.org/10.1016/S0140-6736(12)60149-4
- UNICEF. (2023). *State of the world's children report: For every child, mental health*. UNICEF. https://www.unicef.org/reports/state-of-worlds-children
- Misra, G. (2009). *Psychology in India (Vol 1): Basic Psychological Processes and Human Development.* Pearson.
- Kumar, N. (2018). *Mental health and well-being: An Indian psychology perspective*. Routledge.
- Roy, P., Sanyal, S. & Patel, S. (2022), *The elderly in India: A collection of selected writings.* Alternotes Press.

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

SKILL BASED COURSE

CONTENT DEVELOPMENT FOR EARLY CHILDHOOD CARE AND EDUCATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Content Development for Early Childhood Care and Education	2	0	0	2	As per admission norms	Nil

Learning Objectives

- To understand the principles of content development for early childhood.
- To evaluate different forms of developmentally and culturally appropriate content and assess the impact on child engagement and learning.
- To create content which is developmentally appropriate, culturally relevant, and inclusive.

Learning Outcomes

The students would be able to:

- Learn to identify culturally relevant, inclusive, and engaging content for early childhood.
- Understand content structure in different forms such as stories, songs, and digital platforms, and their impact
- Develop content based on children's engagement and learning outcomes using movement, music, theatre, and puppetry.

Practical
(Credits 2; Hours 60)

UNIT I: Foundations of Content development for early childhood 20 Hours

This unit lays thrust on the principles of early childhood content and understanding the different forms of available content

- Characteristics of developmentally appropriate, culturally relevant, and inclusive content
- Exploring different forms of content with special emphasis on folk forms
- Significance of print and audio-visual content and its usage

UNIT II: Principles of development and assessment of content **20 Hours**

This unit highlights the structure, components and approaches to content development for early childhood

- Analyzing content structure in stories, songs, poems, and media forms
- Storytelling techniques and approaches: Traditional to Digital
- Principles of creating interactive digital media
- Assessing child engagement and learning outcomes with different media

UNIT III: Designing Engaging Content for Early Childhood **20 Hours**

This unit focuses on designing and execution of content which is developmentally and culturally appropriate

- Designing and developing appropriate content for early childhood- storybooks, storyboards, digital media, activity book
- Integrating movement, music, theatre, puppetry, and arts in content
- Execution of the designed content in Early Childhood settings

Essential Readings

- Vats, S. P. (2019). *Once upon a story: Divaswapna and the Gijubhai method*. The Write Place & Authors Upfront.
- Yoon, J & Onchwari, J. A. (2005). Teaching young children science: Three key points. Early Childhood Education Journal, 33(6), 419-423. DOi:10.1007is10643-006-0064-4
- Cooper, P. M. (2005). Literacy learning and pedagogical purpose in Vivian Paley's 'storytelling curriculum'.Journal of Early Childhood Literacy, 5(3), 229-251. DOI: 10.1177/1468798405058686
- Eliason, C. & Jenkins, L. (2012). A practical guide to early childhood curriculum. (9th Ed.). Upper Saddle River, NJ: Pearson.
- Chatterjee, R.B. & Gupta, N (2009). *Reading children: Essays on children's literature.* New Delhi: Orient BlackSwan. p 1-17
- Harris, V. J. (2008). Children's books: Selecting books that children will want to read. The Reading Teacher, 61(5), 426-430.
- Gopalkrishnan, A (2011). The essentials and foundations of multicultural children's literature.Multicultural children's literature: A critical issues approach. Los Angeles: Sage. pp. 21-48.
- Prakash, S. & Mathur, P. (2000). Children and TV. NCERT,
- Real, M. R. (1996). Exploring Media Culture. New Delhi: Sage
- Singer D.G. & Jerome L. (2012). Handbook of Children and Media. California: Sage.
- Gadzikowski, A. (2013). *Story dictation: A guide for early childhood professionals*. Redleaf Press.

Suggested Readings

- Schickedanz, J. A., & Collins, M. F. (2013). *So much more than the ABCs: The early phases of reading and writing*. National Association for the Education of Young Children (NAEYC).
- Wormsley, D. P., & D'Andrea, F. M. (Eds.). (2016). *Handbook of effective literacy instruction: Research-based practice K-8*. AFB Press.
- Dharmarajan, G. (2013). *Katha's treasure trove: A collection of stories for children*. Katha Books.
- Popat Vats, S. (2021). *Understanding metacognition in the foundational years*. Edu-Tech Publishing
- Ramchandani, V. (2018). *Sera learns to fly*. Katha Books.
- Dharmarajan, G. (2015). *The magical fish*. Katha Books.
- Khyrunnisa, A. (2010). *Howzzat Butterfingers!*. Puffin Books.
- Eipe, R. (n.d.). *Hello Sun*. Pratham Books
- Kurian, P. (n.d.). *Bow Meow Wow*. Pratham Books

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

SKILL BASED COURSE

RESOURCE DEVELOPMENT FOR DISABILITY AND INCLUSION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Resource Development for Disability and Inclusion	**2**	**0**	**0**	**2**	**As per admission norms**	**Nil**

Learning Objectives

- To understand and analyse inclusive environments
- To design contextually sensitive spaces catering to varied disabilities
- To develop contextually sensitive aids catering to varied disabilities
- To create inclusive environments and implement aids

Learning Outcomes

The students would be able to:

- Learn the concept of inclusive environments and the importance of accessibility for individuals with various disabilities.
- Create adaptable spaces that are accessible and demonstrate the ability to apply universal design principles
- Demonstrate the ability to create contextually appropriate aids for different disabilities.
- Evaluate the effectiveness of their aids through implementation and feedback.

PRACTICAL
(Credits 2, Hours 60)

Unit I: Understanding Inclusive Environment across contexts **20 Hours**

This unit lays thrust on the principles of inclusion and understanding accessibility and assessment of diverse needs

- Defining and understanding the need for inclusive environments through field visits and observations
- Needs Assessment Survey and accessibility mapping
- Disability experiences in diverse environments

Unit II: Designing inclusive spaces across contexts **20 Hours**

This unit focuses on creating inclusive spaces that demonstrate the ability to apply universal design principles

- Conceptualizing inclusive spaces- Built environment
- Designing Sensory Spaces for children- Outdoor and Indoor
- Designing Accessible Materials
- Integrating Assistive Technology

Unit III: Building Inclusive Resource Material/Tools/Aids BALA **20 Hours**

This unit focuses on designing and implementing of resources that are developmentally and culturally appropriate

- Developing Aids for Physical motor, language, and social-emotional development
- Developing Aids for self-help and self-awareness
- Implementation of developed aids
- Fieldwork and Documentation

Essential Readings:

- Leicester, M. (2008). Creating an inclusive school. London: Continuum International Publishing Group.
- Eredics, N. (2018). *Inclusion in Action: Practical Strategies to Modify Your Curriculum*. Baltimore, MD: Brookes Publishing.
- Martin, L, C. (2009). Strategies for teaching students with learning disabilities. Corwin Press
- Cartledge, G., Gardner, R., & Ford, D. Y. (2009). *Diverse Learners with Exceptionalities: Culturally Responsive Teaching in the Inclusive Classroom*. Boston, MA: Pearson.
- Sharma, U., & Desai, I. P. (2012). *Inclusive Education: Perspectives and Practices*. New Delhi, India: Kanishka Publishers.
- Shula, C. (2000). Understanding children with language problems. Cambridge.
- Thapa, K. (2008). Perspectives on learning disabilities in India. (current practices and prospects). Sage Publication, Los Angeles.
- Trusdell M. L., & Horowitz, I. W. (2002). Understanding learning disabilities: a parent guide and workbook for parents, teachers, professionals, advocates and others who work with, or come in contact with, individuals with learning disabilities. (3rd ed) Maryland. York Press.

Suggested Readings:

- Nielsen, L. (2012). *The FIELA Curriculum: 730 Learning Environments*. Louisville, KY: LilliWorks Active Learning Foundation.
- McCardle, P., Miller, B., Lee, J, R., & Tzeng, O, J.L. (2011). Dyslexia across languages. Baltimore.
- Moore, S. (2016). *One Without the Other: Stories of Unity Through Diversity and Inclusion*. Winnipeg, Canada: Portage & Main Press.
- Sleeter, C. E., Upadhyay, S. B., Mishra, A., & Kumar, S. (2012). *School Education, Pluralism and Marginality: Comparative Perspectives*. Hyderabad, India: Orient BlackSwan.

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

SKILL BASED COURSE
RESEARCH INFORMED PRACTICES IN EARLY CHILDHOOD CARE AND EDUCATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Research Informed Practices in Early Childhood Care and Education	**2**	**0**	**0**	**2**	**As per admission norms**	**Nil**

Learning Objectives

- To build a strong understanding of theoretical foundations, ethical principles and diverse research methodologies in Early Childhood Care and Education (ECCE).
- To develop the ability to critically analyse assessment tools, intervention models and statistical techniques used in early childhood research.
- To enable students to design and conduct culturally relevant, evidence-based studies in ECCE settings.
- To prepare students to apply research findings for policy formulation, professional practice and academic growth.

Learning Outcomes

The students will be able to

- Demonstrate advanced knowledge of theoretical frameworks, ethical standards and research methodologies in Early Childhood Care and Education.
- Critically evaluate assessment tools, intervention models and statistical techniques used in early childhood research.
- Design and implement culturally relevant, evidence-based research studies in ECCE.
- Translate research findings into policy recommendations, professional practices and academic contributions.

PRACTICAL
(Credits 2; Hours 60)

- Review and critique departmental dissertations/ research studies in Early Childhood Care and Education (ECCE)
- Early Childhood Education Quality Assessment Scale (ECEQAS), Early Childhood Environment Rating Scale (ECERS-3), Infant/Toddler Environment Rating Scale (ITERS-3). Usage and reflections on strengths, limitations, adaptability and contextual variability of these tools
- Field visit to ECCE centres catering to different ecological settings and conduct systematic observations focusing on infrastructure, learning spaces, play material, pedagogy, teacher-child and peer interactions
- Conduct an ethnographic study of a child's development in different domains to study influence of demographics, caregiving practices and daily routines on development
- Prepare one ECCE assessment module and review different approaches used in ECCE monitoring and evaluation
- Review and critically analyse ECCE framework and policies using secondary data. Reflect on goals, alignment with child development theories, implementation challenges and implications for ECCE practitioners

Essential Readings

- Aggarwal, J. & Sabharwal, V. (2025). *Essentials of research methodology: A practical manual.* Elite Publishing House.
- Bernard, H. R. (2000). *Social research methods: Qualitative and quantitative approaches.* Sage.
- CBPS. (2018). Research studies on ECCE - guide to use the reports. Bengaluru: Centre for Budget and Policy Studies.
- CBPS. (2018, March). Research studies on ECCE: Selected non-ICDS ECCE models: an analysis of features, costs and revenue. Bengaluru: Centre for Budget and Policy Studies.
- Creswell, J. & Creswell, D. (2018). *Research design: Qualitative, quantitative and mixed methods approaches.* Sage Publications.
- Kothari, C. R., & Garg, G. (2023). *Research methodology: Methods and techniques*. New Age International Pvt Ltd.
- Kumar, R. (2019). *Research methodology: A step-by-step guide for beginners (5th ed.).* Sage Publications.
- Silverman, D. (2020). *Qualitative research* (5th ed.). SAGE Publications.
- UGC. (2021). *Academic integrity and research quality*. https://sushantuniversity.edu.in/admin-assets/uploaddata/UGC-Booklet-on-Academic-Integrity-and-Research-Quality.pdf

Suggested Readings

- CBPS. (2018, March). Research studies on ECCE - recommendations and policy directions for ECCE in India: lessons drawn from the three research reports on ECCE. Bengaluru: Centre for Budget and Policy Studies.
- Fleer, M. (2021). *Play in the early years: Research and practice.* Cambridge University Press.
- Gonzalez-Mena, J. (2015). *Foundations of early childhood education: Teaching children in a diverse society*. McGraw-Hill Education.
- Gopalan, M., & Sinha, R. (2014). *Childhood education in India: Policy, practice, and global trends*. Oxford University Press.
- Jain, S., & Raghunathan, R. (2019). *Inclusive approaches to early childhood education in India: Policy frameworks and implementation*. Sage Publications.
- Mukherjee, D. & Banerjee, S. (2021). *Research Methods in Early Childhood Education*. Sage Publications India.
- Punch, K. & Oancea, A. (2020). *Introduction to Research Methods in Education*. Sage Publications.
- Rao, N. & Sun, J. (2020). *Early Childhood Education in Asia: Research*. Policy and Practice. Routledge.

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

SKILL BASED COURSE
PARTICIPATORY LEARNING METHODOLOGYAND ITS APPLICATION S IN HUMAN DEVELOPMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Participatory Learning Methodology And its Applications in Human Development	2	0	0	2	As per admission norms	Nil

Learning Objectives

- To develop an in-depth understanding of the principles, theories and evolution of participatory learning in human development.
- To equip students with practical skills in using participatory tools, facilitation techniques and communication strategies.
- To enable learners to design, plan and implement context-specific and culturally responsive participatory learning programmes.
- To build competence in monitoring, evaluating and documenting learning processes for improving impact and sustainability.

Learning Outcomes

Students will be able to:

- Demonstrate understanding of participatory learning frameworks, adult learning theories and ethical considerations in human development.
- Apply participatory tools and facilitation techniques effectively in learning activities across diverse settings.
- Design and implement structured, inclusive and context-relevant participatory learning modules.
- Evaluate learning programmes using appropriate M&E methods and document outcomes for future improvement and scalability.

PRACTICAL

(Credits 2; Hours 60)

- To study and document Participatory Learning tools and techniques in selected local contexts
- To attend a session or workshop to understand and learn how to conduct participatory learning methods
- Field visits to NGOs working in selected community settings

- To design and conduct Participatory Learning tools and techniques with a community
- To conduct a role play/street play on issues related to adolescents and adults, and to practice facilitation skills through hands-on experiential learning and reflective understanding in simulated real-life situations, using energizers, effective questioning and probing, role play and storytelling, while ensuring active participation, group dynamics management, and inclusion.
- To design a participatory training module on relevant issues in human development. The module shall contain the following items:
    - Objectives
    - Target group
    - Duration of the session and activities
    - Material required
    - Participatory activities
    - Prompts and probing
    - Energizers and closures

Essential Readings

- Acero, A., Fernandes-Jesus, M., & Chakraborty, A. (2024). Understanding community engagement from practice. *Frontiers in Education*. https://www.frontiersin.org/journals/education/articles/10.3389/feduc.2024.1386729/full
- Boggs, J. G., Mickel, A. E., & Holtom, B. C. (2007). Experiential learning through interactive drama: An alternative to student role plays. *Journal of Management Education, 31*(6), 832–858. https://www.researchgate.net/publication/255585585_Experiential_Learning_Through_Interactive_Drama_An_Alternative_To_Student_Role_Plays
- Cullinane, A. (2009). Bloom's taxonomy and its use in classroom assessment. *Learning, Resource & Research Guides, 1*(13). https://www.researchgate.net/publication/356194456_Bloom's_Taxonomy_and_its_Use_in_Classroom_Assessment
- de Weger, E., Herens, M., Reijnders, T., Janssen, M., van de Goor, I., & Koelen, M. (2024). Tracking the development of community engagement over time: A 4-year multiple-case study in the Netherlands. *Journal of Participatory Medicine*. https://doi.org/10.2196/47500
- Family for Every Child. (2023). *A toolkit for participatory evaluation of practice*. Better Care Network. https://bettercarenetwork.org/sites/default/files/2023-03/english_-_toolkit_for_participatory_evaluation_of_practice_0.pdf
- Fry, H., Ketteridge, S., & Marshall, S. (2009). Understanding student learning. In H. Fry, S. Ketteridge, & S. Marshall (Eds.), *A handbook for teaching and learning in higher education* (3rd ed., pp. 8–26). Routledge.
- Griffiths, S. (2009). Teaching and learning in small groups. In H. Fry, S. Ketteridge, & S. Marshall (Eds.), *A handbook for teaching and learning in higher education* (3rd ed., pp. 72–84). Routledge.
- Wood, L. (2019). *Participatory action learning and action research: Theory, practice and process* (1st ed.). Routledge. https://doi.org/10.4324/9780429441318
- Narayanasamy, N. (2009). *Participatory rural appraisal: Principles, methods and application*. Sage Publications India Pvt. Ltd.

- National Institute of Rural Development and Panchayati Raj. (n.d.). *Participatory rural appraisal (PRA)*. https://nirdpr.org.in/nird_docs/gpdp/pra.pdf
- Mukherjee, N. (2002). *Participatory learning and action with 100 methods*. Concept Publishing Company

Suggested Readings

- Liu, F., Ding, B., Guan, C., Wei, Z., Niyato, D., & Tan, J. (2024). Demystify adult learning: A social network and large language model assisted approach. *arXiv*. https://doi.org/10.48550/arXiv.2404.13267
- Michaels, I., Gomez, V., & Price, I. K. (2024). Teaching community engagement for health professions students in underserved areas. *Discover Education, 3*, Article 84. https://doi.org/10.1007/s44217-024-00323-3
- O'Sullivan, S. (2023). The ethics of engagement and representation in community-based participatory research. *Journal of Community & Applied Social Psychology*. https://www.tandfonline.com/doi/full/10.1080/17496535.2023.2211756#d1e156
- Ozano, K., Zakaria, M., Bell, S., Malunga, G., Purohit, H., Bongo, P., … Dean, L. (2024). Seven core competencies and conditions for equitable partnerships and power sharing in community-based participatory research. *Global Health Action, 17*(1). https://gh.bmj.com/content/9/11/e015497
- Silver, J., Happer, A., & Kennedy, T. (2025). Integrating adult learning theories into agricultural extension training: Insights from MSU's international program. *International Journal of Agricultural Extension and Education*. https://www.researchgate.net/publication/396509900
- United Nations Development Programme. (2024). *Effective collaborative action: Guidance for participatory monitoring, evaluation, and learning (PMEL) system*. UNDP. https://www.undp.org/sites/g/files/zskgke326/files/2024-05/annex_vi_participatory_monitoring_system.pdf

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

Semester II

DISCIPLINE SPECIFIC CORE COURSE

CHILD DEVELOPMENT AND INDIAN KNOWLEDGE SYSTEMS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title and code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Child Development and Indian Knowledge Systems	**4**	**2**	**0**	**2**	**As per admission Norms**	**Nil**

Learning Objectives

- To explore the traditional Indian knowledge system's perspective on child development,
- including concepts from *Ayurveda, Vedas*, and other ancient scriptures.
- To understand prenatal developmental stages from Indian traditional knowledge.
- To understand how traditional practices and beliefs have shaped parenting in India.

Learning Outcomes

- The students will be able to demonstrate a comprehensive understanding of child development from traditional Indian perspectives.
- The students will be able to apply knowledge of traditional Indian practices, such as prenatal education and philosophical foundations of development.
- The students will be able to understand the cultural context, religious influence and emerging trends that shape child development.

THEORY

(Credits 2; Hours 30)

UNIT I: Prenatal Development and Indian Knowledge System 7 Hours

This unit explores prenatal development, highlighting the biological, physical, and psychological changes that occur from conception to birth. It also integrates perspectives from the Indian Knowledge System, emphasizing traditional wisdom, holistic practices, and cultural understandings related to maternal and fetal well-being.

- Holistic approach to prenatal development
- Risk factors associated with prenatal development
- Child care practices: Beliefs and indigenous knowledge about prenatal care (The *Samskaras*)
- Traditional medical practices in India

UNIT II: Childhood, Socialization and Samskar 8 Hours

This unit focuses on childhood within the cultural context of socialization and samskara, examining traditional child-rearing practices, family dynamics, and the influence of philosophy, spirituality, and evolving parenting approaches.

- Understanding Indian Samskaras: Cultural context and religious influence, role of family, independence vs interdependence, religion and spirituality structure and dynamics, family systems (Nuclear/Joint), role of elders, gender roles
- Traditional child rearing: Beliefs and practices, *Ayurveda,* Indian philosophical writings (*Vedas, Panchkosha* theory), Yoga
- Parent-child relationship: Care, respect and faith, contemporary parenting (generation gap)

UNIT III: **Indigenous Philosophy and Traditions 8 Hours**

This unit focuses on indigenous philosophies and traditional frameworks, exploring concepts like Purushartha, Ashrama, and classical theories to understand childhood, emotions, and cultural narratives through stories and folk traditions

- Philosophical foundations: Concept of Purushartha (Dharma, Artha, Kama, Moksha)
- Understanding stages of the life span through Ashrama theory
- Childhood in traditional texts and media: Myths, stories, literature, folk tales, folk songs, street plays etc.
- Understanding emotions: Rasa theory, temperament (prakriti)

UNIT IV: Contemporary Child Development and Indian Knowledge Systems 7 Hours

This unit focuses on integrating indigenous knowledge systems with contemporary child development practices to promote wellbeing, culturally rooted education and ethical understanding in a cross-cultural context.

- Promoting wellbeing: yoga and other Indic traditions
- Curriculum and pedagogy: indigenous knowledge and methods, culturally rooted education, experiential learning, value-based education
- Integrating indigenous and contemporary theories of child development
- Evolving ethics in the cross-cultural context

PRACTICAL

(Credits 2; Hours 60)

- To document and critically analyze the role of rites of passage (*Samskaras*) in shaping adolescent identity and socio-cultural development in the Indian context.
- To design, administer, and analyze a survey assessing awareness and practices related to prenatal health among expectant mothers.
- To conduct an in-depth case study examining prenatal care practices, integrating medical, cultural, and familial dimensions.
- To document and review ethno-medical practices related to maternal and child health using secondary sources such as documentaries, newspapers, and peer-reviewed research articles.
- To undertake a field-based exploration of traditional and contemporary child-rearing practices across diverse Indian socio-cultural settings.
- To design and perform a role-play activity demonstrating various strategies that promote child socialization (e.g., storytelling, festivals, rituals, and play), followed by a reflective analysis of their impact on child development within the Indian cultural framework.

Essential Readings

UNIT I: Prenatal Development and Indian Knowledge System

- Choudhry U. K. (1997). Traditional practices of women from India: pregnancy, childbirth, and newborn care. *Journal of obstetric, gynecologic, and neonatal nursing : JOGNN*, *26*(5), 533–539. https://doi.org/10.1111/j.1552-6909.1997.tb02156.x
- Misra, G., Cornelissen, R. M. M., & Varma, S. (2010). *Foundations of Indian psychology: Concepts and theories* (Vol. 1). Pearson India.
- Misra, G., Cornelissen, R. M. M., & Varma, S. (2011). *Foundations of Indian psychology: Practical applications* (Vol. 2). Pearson Education India.

UNIT II: Childhood, Socialization and Samskar

- Chaube, S. P. (2002). *Psychology of adolescents in India*. Concept Publishing Company.
- Gupta, D. (2009). The cultural context of child development: A study of preschool children in an urban setting in India. *Childhood Education, 85*(6), 354–359.
- Sondhi, R. (2017). *Parenting adolescents in India: A cultural perspective* (pp. 91–108). https://www.researchgate.net/publication/317322156_Parenting_Adolescents_in_India_A_Cultural_Perspective

UNIT III: Indigenous Philosophy and Traditions

- Mahadevan, B., Bhat, V. R., & Nagendra Pavana, R. N. (2022). *Introduction to Indian knowledge system: Concepts and applications*. Atlantic Publishers and Distributors Pvt. Ltd.
- Ramanujan, A. K. (1991). *Folktales from India*. Pantheon Books.
- Rao, K. R., Paranjpe, A. C., & Dalal, A. K. (Eds.). (2008). *Handbook of Indian psychology*. Cambridge University Press India.

UNIT IV: Contemporary Child Development and Indian Knowledge Systems

- Chaudhary, N. (2004). *Listening to culture: Constructing reality from everyday talk*. SAGE Publications.
- Chaudhary, N. (2013). Dynamics of parental socialization in India. In H. Selin (Ed.), *Parenting across cultures: Child rearing, motherhood and fatherhood in non-Western cultures* (pp. 11–24). Springer.
- Desai, S., Dubey, A., Joshi, B. L., Sen, M., Shariff, A., & Vanneman, R. (2010). *Human development in India: Challenges for a society in transition*. Oxford University Press.
- Rao, K. R. (2011). *Applied yoga psychology: Studies of neurophysiology of meditation*. Springer India.

Suggested Readings

- Bowen, Z., & Hinchy, J. (2015). Introduction: Children and knowledge in India. *South Asian History and Culture, 6*(3), 317–329. https://doi.org/10.1080/19472498.2015.1030875
- Laible, D. J., Carlo, G., & Raffaelli, M. (2000). The differential relations of parent and peer attachment to adolescent adjustment. *Journal of Youth and Adolescence, 29*(1), 45–59. https://link.springer.com/article/10.1023/A:1005169004882
- Ariès, P. (1962). *Centuries of childhood: A social history of family life* (R. Baldick, Trans.). Vintage Books.
- Kumar, K. (1992). *What is worth teaching?*. Orient BlackSwan.

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

DISCIPLINE SPECIFIC CORE COURSE

LANGUAGE AND COGNITION IN DEVELOPMENT STUDIES

CREDIT DISTRIBUTION, ELIGIBLITY AND PRE REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Language and Cognition in Development Studies	4	3	1	0	As per admission norms	Nil

Learning Objectives

- To develop a foundational understanding of language as a cognitive system, including its structure, components, and theoretical frameworks.
- To explore key cognitive processes involved in language perception, acquisition, processing, and use across developmental stages.
- To analyse the interconnections between language, communication, thought, culture, and higher-order cognitive functions.
- To examine contemporary research, cross-cultural perspectives, and practical applications related to language, cognition, and communication.

Learning Outcomes

- Students will be able to:
- Demonstrate comprehensive knowledge of linguistic components, cognitive theories, and major debates in language and cognition.
- Explain and analyse cognitive processes underlying language processing, acquisition, memory, attention, and bilingualism.
- Critically evaluate the role of language in reasoning, problem-solving, social cognition, and emotional expression.
- Apply theoretical understanding to interpret language disorders, cross-cultural variations, and contemporary issues in cognition, including AI and language models.

THEORY

(Credits 3; Hours 45)

UNIT I: Foundations of Language and Cognitive Science 12 Hours

This unit introduces the foundational ideas of language and cognitive science, focusing on how humans acquire, process, and use language to make meaning. It also examines the mental processes involved in thinking, perception, memory, and problem-solving, highlighting their role in learning and development.

- Nature and definition of language; human vs. animal communication
- Components of language: phonology, morphology, syntax, semantics, pragmatics
- Cognitive science: origins, core assumptions, and interdisciplinary contributions
- Cognition and mother tongue: Relationship between language, thought, and culture
- Major debates:
  - Linguistic determinism vs. linguistic relativity (Sapir–Whorf)
  - Modularity of mind (Chomsky, Fodor)
  - Universal Grammar and innate mechanisms

UNIT II: Cognitive Processes Underlying Language 12 Hours

This unit focuses on the cognitive mechanisms that support language, including brain processing, memory, attention, developmental milestones, and the impact of multilingualism on concept formation and language control.

- Language processing in the brain: key regions and pathways
- Perception and comprehension of speech
- Language acquisition and developmental milestones
- Memory and language: working memory, semantic memory, episodic memory
- Attention, executive functions, and language control
- Bilingualism and multilingualism: cognitive advantages, code-switching, cognitive load
- Concept formation, categorization, and the role of linguistic labels

UNIT III: Language, Communication, and Higher-Order Cognition 12 Hours

This unit focuses on role of language in higher-order cognitive functions such as communication, reasoning, social understanding, and emotional expression, emphasizing how linguistic processes shape thought and interaction.

- Pragmatics: inference, implicature, context, and meaning-making
- Symbolic representation and mental imagery
- Language in problem-solving, reasoning, and decision-making
- Narrative thought, storytelling, and cognitive organization
- Social cognition and language:
  - Theory of Mind and communicative intent
  - Joint attention, gesture, and multimodal communication
- Language, emotion, and cognition: appraisal, expression, and metaphor

UNIT IV: Contemporary Issues, Research, and Applications 9 Hours

This unit focuses on contemporary challenges and research in language and cognition, focusing on disorders, environmental impacts, emerging AI influences, and cross-cultural perspectives to inform practical applications.

- Language disorders: aphasia, dyslexia, developmental language disorder
- Cognitive impacts of deprivation, trauma, and delayed language exposure
- AI, language models, and human cognition
- Cross-cultural perspectives on communication and cognition

TUTORIAL

(Credits 1; Hours 15)

- Discussions and readings on language and popular culture
- To document experiences of growing up in bilingual/multilingual homes.
- To analyse selected regional stories/literature that showcase Indian culture.
- To critically evaluate the linkages between cognition and language using everyday conversations of children.
- To collect lullabies, folklore and folk stories for representations of childhood cognition and language.

Essential Readings

UNIT I: Foundations of Language and Cognitive Science

- Dhamija, R. (2011). *Cognitive psychology*. Sage.
- Eysenck, M. W., & Brysbaert, M. (2021). *Cognitive psychology: A student's handbook* (8th ed.). Routledge.
- Fromkin, V., Rodman, R., & Hyams, N. (2017). *An introduction to language* (11th ed.). Cengage Learning.

UNIT II: Cognitive Processes Underlying Language

- Sinha, C. (2015). *Language and cognition*. Routledge.
- Bhatia, T. K., & Ritchie, W. C. (Eds.). (2004). *The handbook of bilingualism*. Blackwell.
- Agnihotri, R. K. (2007). *Towards a linguistic theory of second language*. Orient Blackswan.

UNIT III: Language, Communication, and Higher-Order Cognition

- Ajay Kumar, & Archana. (2020). *Applied cognitive psychology*. Sage.
- Chomsky, N. (2016). *Language and mind* (3rd ed.). Cambridge University Press.
- Kathpalia, S. S. (2011). *Metaphor and communication in Indian contexts*. Springer.

UNIT IV: Contemporary Issues, Research, and Applications

- Bhat, D. N. S. (2000). *The structure of Indian languages*. Motilal Banarsidass.
- Dalal, A. K., & Misra, G. (Eds.). (2010). *The core and context of Indian psychology*. Pearson.
- Poibeau, T., & Villavicencio, A. (Eds.). (2018). *Language, cognition, and computational models*. Cambridge University Press.
- Paul, R., & Norbury, C. F. (2019). *Language disorders from infancy through adolescence* (5th ed.). Elsevier.
- Siegel, D. J. (2012). *The developing mind: How relationships and the brain interact to shape who we are* (2nd ed.). Guilford Press.
- Taqa, A. R. (2025). *Multilingual education and its impact on cognitive development*. Enhanced Research Publications. https://www.researchgate.net/publication/388869478_Multilingual_Education_and_Its_Impact_on_Cognitive Development
- Van der Kolk, B. A. (2015). *The body keeps the score: Brain, mind, and body in the healing of trauma*. Viking.

Suggested Readings

- Karanth, P., & Rozario, J. (2011). *Learning disabilities in India: From clinic to classroom*. Sage.
- Kroll, J. F., & De Groot, A. M. B. (Eds.). (2005). *Handbook of bilingualism: Psycholinguistic approaches*. Oxford University Press.
- Gupta, A.F. (Ed.). (2026). Bilingualism in India. Orient Blackswan.
- Misra, G. (Ed.). (2010). *Psychology in India: Volume 4 – Theoretical and methodological developments*. Pearson.
- Mohanty, A. K. (2019). The multilingual reality: Living with languages. Multilingual Matters.
- Narasimhan, R. (1998). *Language and cognition*. Sage.
- Rao, N., & Pearson, E. (Eds.). (2010). *Asia-Pacific perspectives on early childhood education*. Routledge.
- Singh, R. (Ed.). (1995). *The yearbook of South Asian languages*. Sage.
- Vygotsky, L. S. (1986). *Thought and language*. MIT Press. (Original work published 1934)
- Zheng, Z., Degotardi, S., Djonov, E. (2021). Supporting multilingual development in early childhood education: A scoping review, International Journal of Educational Research. *110*, 101894. ISSN 0883-0355. https://doi.org/10.1016/j.ijer.2021.101894.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
ORGANIZATION AND MANAGEMENT OF PROGRAMMES FOR ADULTS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title and code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Organization and Management of Programmes for Adults	4	2	0	2	As per admission norms	Nil

Learning Objectives:

- To develop an in-depth understanding of professional contexts, ethical practices and intervention strategies for working with adults, families and communities.
- To build skills in programme design, planning and needs assessment across diverse settings.
- To enhance the ability to create sustainable, culturally responsive and context-specific programmes.
- To strengthen practical competence for implementing and evaluating interventions within varied socio-cultural and institutional environments.

Learning Outcomes:

Students will be able to-

- Demonstrate a clear understanding of professional contexts, ethical standards and intervention approaches for adults, families and communities.
- Apply skills in programme design, planning and needs assessment to real-world scenarios.
- Design sustainable, culturally responsive and context-appropriate programmes for diverse settings.
- Implement and evaluate intervention programmes within varied socio-cultural and institutional environments

THEORY

(Credits 2; Hours 30)

UNIT I: Contexts of Work and Ethical Practice **7 Hours**

This unit focuses the diverse contexts in which work takes place, including formal, informal, and emerging professional settings. It also highlights the importance of ethical practice.

- Study of professional work environments, including homes, workplaces, communities, and care/protection institutions.
- Study of professional ethics, standards, and codes of conduct relevant to community and adult-focused interventions.

UNIT II: Programme Design and Planning **8 Hours**

This unit focuses on designing and planning programmes for adults and families by analysing their objectives, frameworks, and methodologies while ensuring sustainability through rights-based and strategic implementation.

- Analysis of the nature, objectives, and methodological approaches of programmes for adults and families
- Overview of institutional frameworks, guiding philosophies, services, and interventions
- Strategies for ensuring sustainability and long-term impact of programmes
- Rights-based planning: allocation of resources, defining activities, clarifying roles and responsibilities, effective communication, and establishing timelines

UNIT III: Needs Assessment and Community Analysis **7 Hours**

This unit focuses on the importance of assessing community needs and resources through situational analysis and baseline surveys to effectively inform programme design and implementation.

- Situational analyses and baseline surveys to identify community and individual needs.
- Mapping and evaluation of resources available within the community.
- Application of needs assessment findings to inform and guide programme design.

UNIT IV: Implementation, Monitoring and Documentation **8 Hours**

This unit focuses on effective implementation, monitoring, and documentation of interventions by integrating multi-level strategies and services while adapting programmes to diverse contexts and ideologies.

- Development and execution of strategies for interventions at individual, group, and community levels
- Integration of governmental, non-governmental, institutional, and community-based services
- Systematic approaches to monitoring, evaluation, budgeting and documentation of programme outcomes
- Adaptation of interventions to align with diverse ideological perspectives and practical contexts.

PRACTICAL

(Credits 2; Hours 60)

- To undertake visits to selected institutions working with adults and systematically document development-oriented programmes and interventions.
- To design and conduct a needs assessment survey in selected localities and communities in order to profile the everyday lives, challenges, and support systems of adults.
- To carry out a community baseline survey to generate data for the planning and design of

policies, programmes, and interventions for adult populations.

- To develop and utilize checklists to assess institutional standards, service quality, and infrastructural and programmatic requirements of adult-focused institutions.
- To complete an internship in adult institutions with a focus on programme planning, implementation, and evaluation of intervention strategies.
- To prepare an in-depth case study of an adult, identifying needs, strengths, and activities across physical, cognitive, emotional, social, and vocational domains of adult development.

Essential Readings

UNIT I: Contexts of Work and Ethical Practice

- Merriam, S. B., & Baumgartner, L. M. (2020). *Learning in adulthood: A comprehensive guide* (4th ed.). Jossey-Bass.
- Bryson, J. M. (2018). *Strategic planning for public and nonprofit organizations* (5th ed.). Wiley.
- Ledwith, M. (2016). *Community development: A critical approach* (2nd ed.). Policy Press.
- Freire, P. (2000). *Pedagogy of the oppressed* (30th anniversary ed.). Bloomsbury Academic.

UNIT II: Program Design and Planning

- Armstrong, K. H., et al. (2014). *Evidence-based interventions for adult and family services*. Springer.
- Sriram, R. (2014). *Engaging in social intervention (for mentors)* (Vol. II). Concept Publishing Company.
- Bamberger, M., Rao, V., & Woolcock, M. (2010). *RealWorld evaluation: Working under budget, time, data, and political constraints* (2nd ed.). SAGE Publications.
- Kettner, P. M., Moroney, R. M., & Martin, L. L. (2017). *Designing and managing human service programs* (5th ed.). Pearson**.**

UNIT III: Needs Assessment and Community Analysis

- Brookfield, S. D. (2013). *Powerful techniques for teaching adults*. Jossey-Bass.
- Erikson, E. H. (1997). *The life cycle completed* (Extended version). W. W. Norton & Company.

- United Nations Development Programme. (2025). *Human rights-based approach to development programming: HRBA toolkit*. UNDP. https://www.undp.org/publications/human-rights-based-approach-development-programming-hrba-toolkit
- Udayan Care. (n.d.). *Standards of care*. https://www.udayancare.org/sites/default/files/Standards_of_Care.pdf

UNIT IV: Implementation, Monitoring, and Documentation

- Kusek, J. Z., & Rist, R. C. (2004). *Ten steps to a results-based monitoring and evaluation system: A handbook for development practitioners*. World Bank.
- BetterEvaluation. (n.d.). *BetterEvaluation toolkit: Evaluation tools and resources*. https://www.betterevaluation.org/tools-resources
- United Nations Development Programme. (n.d.). *Handbook on planning, monitoring, and evaluating for development results*. UNDP. https://www.undp.org/turkiye/publications/undp-handbook-planning-monitoring-and-evaluating-development-results

Suggested Readings

- UNESCO. (2016). *Global report on adult learning and education (GRALE)*. UNESCO Institute for Lifelong Learning. https://unesdoc.unesco.org/ark:/48223/pf0000372274
- Hart, R.A. (1997). Children's Participation: The Theory and Practice of Involving Young Children in Community Development and Environmental Care. Routledge.
- Rivera, W. M. (Ed.). (2019). *Planning adult learning: Issues, practices, and directions*. Routledge.
- Jarvis, P. (2004). *Adult education and lifelong learning: Theory and practice* (2nd ed.). RoutledgeFalmer.
- Mezirow, J. (2000). *Learning as transformation: Critical perspectives on a theory in progress*. Jossey-Bass.
- Knowles, M. S., Holton, E. F., & Swanson, R. A. (2015). *The adult learner* (8th ed.). Routledge.
- Ungar, M. (2012). *The social ecology of resilience: A handbook of theory and practice*. Springer

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

SOCIOLOGY OF FAMILY AND COMMUNITY CARE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Sociology of Family and Community Care	4	2	0	2	As per admission norms	Nil

Learning Objectives

- To enable students to critically understand the social, cultural, ethical and economic dimensions of care in family and community.
- To explain how care operates within family, community, and wider social structures.
- Examine caregiving as a relational and socially shaped practice.
- Analyze how urbanization, mobility, and changing family structures shapes informal support networks.

Learning Outcomes

The students would be able to:

- Understand the sociological concept of care and its multiple dimensions in family, community and society.
- Analyze care as a practice and experience within social relationships.
- Assess care as a socio-economic contribution and its role in sustaining social and economic systems.
- Examine the contemporary challenges, urbanization and community support.

THEORY

(Credits 2; Hours 30)

UNIT I: Conceptualizing Care and its Multiple Dimensions 6 Hours
This unit focuses on the concept of care, its historical evolution, multiple dimensions, and the impact of changing family patterns on caregiving practices.

- Sociological definitions and concept of care
- Historical evolution of care: From kinship-based care to institutional and state care
- Care as practice, relationship, value, and emotional labour in family and community
- Changing family patterns and their impact on caregiving

UNIT II: Dimensions of Care in Social Sphere 8 Hours
This unit focuses on care in the social sphere, exploring its moral, cultural, and gendered dimensions, societal expectations, and the of technology in contemporary caregiving.

- Sociology perspective of care, support and welfare
- Care as a moral, social and cultural obligation, gendered
- Care and social stratification, care in crises, in institutional care
- Cultural meanings of dependency and autonomy related to care
- Digital and technological mediation of care
- Expectations of modern society in caregiving practices

UNIT III: Ethics of Care 6 Hours
This unit focuses on the ethics of care, addressing theoretical frameworks, socio-economic valuation, global care issues, and ethical dilemmas in caregiving practices.

- Philosophical and theoretical frameworks
- Care as socio-economic contribution (Valuation of paid and unpaid caregiving)
- Transnational ethics: Global care chains, ethical issues in migration of care labour
- Ethical dilemmas in caregiving: Consent, privacy, boundaries, burnout and structural inequalities

UNIT IV: Challenges of Care in Contemporary Society 10 Hours
This unit focuses on contemporary challenges in care, highlighting demographic pressures, inequalities, care labour issues, and ethical implications of policy and technological changes.

- Demographic and infrastructural challenges including eldercare, childcare, disability and mental health services, long-term care need
- Intersectionality and Inequalities in access to care and community-based support systems.
- Care labour precarity and safety concerns alongside cases of neglect, violence, and abuse in care institutions
- Policy and technological transitions: maternity and disability rights, and elder care confronting new ethical challenges posed by automation, AI-driven care tools, and robotic caregivers.

PRACTICAL

(Credits 2; Hours 60)

- To conduct a phenomenological study to draw personal experience of care or observations from your own home
- To conduct 'care' mapping within a household or community. Identify care practices such as childcare, elderly care, caregiver interactions, and related activities
- Conduct interviews to examine the role of family size, migration, SES, gender and cultural influences on caregiving arrangements
- To conduct a survey to critically analyse determinants of inequality in caregiving practices. The survey should reflect on influence of culture, SES, gender norms, paid and unpaid caregiving labor and socio-economic value of care
- Field visits to care institutions catering to different stages of the lifespan and life circumstances. Conduct systematic observation of infrastructure, services, daily routine, interactions
- To conduct brief research on experiences in long term caregiving
- To prepare a report looking at the Indian cultural care practices in familial contexts
- Use secondary data to investigate role of families, communities and institutions during crisis in providing childcare and eldercare
- To critically analyse the functioning of assistive technologies and AI tools usage in care practices. Comment on their accessibility, efficacy, ethical risks and concerns

Essential Readings

UNIT I: Conceptualizing Care and its Multiple Dimensions

- Aulenbacher, B., Lutz, H., & Riegraf, B. (2018). Introduction: Towards a global sociology of care and care work. *Current Sociology, 66*(4), 495–502.
- England, P. (2005). Emerging theories of care work. *Annual Review of Sociology, 31*, 381–399.
- Mobile Creches. (2020*).* State of the young child in India *(1st ed.).* Routledge India. https://bonniesglobalcafe.worldforumfoundation.org/wp-content/uploads/2020/10/7037f4f7-mc-state-of-the-young-child-in-india-report.pdf
- Penderi, E., Koulouglioti, C., & Pafiti, I. (2023*).* A multidimensional–multilevel approach to literacy-related parental involvement and its effects on preschool children's literacy competences: A sociopedagogical perspective. Education Sciences, 13(12), Article 1192. https://doi.org/10.3390/educsci13121192

UNIT II: Dimensions of Care in Social Sphere

- Tronto, J. C. (2013). *Caring democracy: Markets, equality, and justice*. New York University Press.
- Daly, M. (2002). Care as a good for social policy. *Journal of Social Policy, 31*(2), 251–270.
- Rai, S. M. (2024). *Depletion: The human costs of caring.* Oxford University Press.
- Folbre, N., & Bittman, M. (Eds.). (2004). *Family time: The social organization of care (Vol. 2)*. Psychology Press.

UNIT III: Ethics of Care

- Müller, B. (2019). The careless society: Dependency and care work in capitalist societies. *Frontiers in Sociology*, 1–10.
- Held, V. (2006). *The ethics of care: Personal, political, and global*. Oxford University Press.
- Noddings, N. (1984). *Caring: A feminine approach to ethics and moral education*. University of California Press.
- Sevenhuijsen, S. (2020). *Citizenship and the ethics of care: Feminist considerations on justice, morality and politics*. Routledge.
- Pease, B., Vreugdenhil, A., & Stanford, S. (Eds.). (2020). *Critical ethics of care in social work: Transforming the politics and practices of caring*. Routledge.

UNIT IV: Challenges of Care in Contemporary Society

- Folbre, N. (2006). Measuring care: Gender, empowerment, and the care economy. *Journal of Human Development, 7*(2), 183–199.
- Luttrell, W. (2020). *Children framing childhoods: Working-class kids' visions of care*. Policy Press.
- Lynch, K. (2007). Love labour as a distinct and non-commodifiable form of care labour. *The Sociological Review, 55*(3), 550–570.
- Nandi, S., & Samantroy, E. (Eds.). (2022). *Gender, unpaid work and care in India*. Routledge.
- Piepzna-Samarasinha, L. L. (2018). *Care work: Dreaming disability justice*. Arsenal Pulp Press.

Suggested Readings

- Daly, M. (Ed.). (2001). *Care work: The quest for security*. International Labour Organization.
- Duffy, M., Armenia, A., & Stacey, C. L. (2015). *Caring on the clock: The complexities and contradictions of paid care work*. Rutgers University Press.
- Fine, M. (2005). Individualization, risk and the body: Sociology and care. *Journal of Sociology, 41*(3), 247–266.
- Glenn, E. N. (2010). *Forced to care: Coercion and caregiving in America*. Harvard University Press.
- Ilcan, S. (2009). Privatizing responsibility: Public sector reform under neoliberal government. *Canadian Review of Sociology, 46*(3), 207–234.
- Lam, W. W. Y., Nielsen, K., & Kelly, C. M. (2023). The experience of working informal carers of older people: A qualitative diary study. *International Journal of Care and Caring*, 1–16.
- Weicht, B. (2008). The morality of caring: The discursive construction of informal care. *Enquire, 1*(2), 120–143.
- Braga, J. (Ed.). (2024). *Ethics of care: Theoretical and practical perspectives*. Springer.
- Robinson, F. (2021). *The ethics of care: A feminist approach to human security*. Oxford University Press.
- Sahraoui, N. (2020). *Racialised workers and European older-age care: From care labour to care ethics*. Palgrave Macmillan.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
CHILDHOOD AND ADOLESCENCE ACROSS ECOLOGICAL SETTINGS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Prerequisite of the Course (if any)
		Lecture	Tutorial	Practical		
Childhood and Adolescence Across Ecological Settings	**4**	**2**	**0**	**2**	**As per admission norms**	**Nil**

Learning Objectives

- Identify major theoretical perspectives and examine the specific features of childhood and adolescence as distinct stages of development.
- To explain key social processes in childhood and adolescence
- To understand childhood and adolescent experiences across cultures.
- To analyse diverse child-rearing practices and socialisation patterns, and evaluate how cultural values influence developmental outcomes.

Learning Outcomes

The students would be able to:

- Develop a comprehensive understanding of the social processes that occur during childhood and adolescence.
- Articulate the diverse experiences of childhood and adolescence across different parts of the world.
- Gain an understanding of how child-rearing practices and socialization vary across cultures.
- Understand how policy frameworks shape programmes for children and adolescents.

THEORY

(Credits 2; Hours 30)

UNIT I: Introduction to childhood and adolescence in different settings 8 Hours

This unit introduces childhood and adolescence as developmental stages experienced across diverse social, cultural, familial, and institutional settings.

- Theoretical perspectives on childhood and adolescences in different context
- Developmental stages in childhood in different ecological settings
- Adolescence and its social significance in different cultures
- Adolescence to youth: A phase of identity formation and social renewal
- Cultural shaping of human development across childhood and adolescence

UNIT II: Child rearing and socialization 8 Hours

This unit focuses on child-rearing and socialization across cultures, examining rituals, developmental practices, and the dynamic interactions between children and their societies.

- Cross-cultural studies of child-rearing
- Birth and early childhood rituals in different cultures
- Socialization and child development in diverse culture
- Reciprocal individual-society interactions

UNIT III: Childhood and adolescence in different cultures 6 Hours

This unit focuses on childhood and adolescence across cultures, highlighting diverse caregiving practices, socialization, and insights from ethnographic studies.

- Child care and socialization in different cultures
- Ethnographic study of childhood and adolescence across cultures

UNIT IV: Childhood and adolescence in Indian communities 8 Hours

This unit focuses on childhood and adolescence in Indian communities, considering historical, cultural, and contemporary perspectives to inform policies and planning for socially disadvantaged children.

- Historical & cultural perspectives and ideological beliefs
- Contemporary status and Wellbeing of Children and Adolescents
- Implications for policy and planning for children with social disadvantage

PRACTICAL

(Credits 2; Hours 60)

- Using mixed and appropriate methods for studying childhood in Indian society.

- Document concepts of childhood across cultures and contexts from primary and secondary sources and relevant findings through analysis of departmental dissertations.

- Carry out a case profile/survey on the following:

    1. Child-rearing practices in different regions of Indian society
    2. Adolescence as a distinct stage with supportive examples
    3. Contemporary societal perspective on childhood and adolescence

- Design a social experiment on emphasizing contemporary conditions, problems and their relevance in human development (using primary and secondary sources of data)

    or

    On changing Indian family with an analysis of the past, present and future, focusing on the diversity of India.

Essential Readings

UNIT I: Introduction to childhood and adolescence in different settings

- Ranganathan, N. (Ed.). (2020). *Understanding childhood and adolescence*. Sage Publications India.
- Arnett, J. (2011). *Human development: A cultural approach*. Pearson.
- Kail. R.V. (2021). Children and their development (7th ed). Pearson.

UNIT II: Child rearing and socialization

- Saraswathi, T. S. (Ed.). (1999). *Culture, socialization and human development: Theory, research and applications in India*. SAGE Publications India.
- Kagitcibasi, Ç. (2007). *Family, self, and human development across cultures: Theory and applications* (2nd ed.). Lawrence Erlbaum Associates

UNIT III: Childhood and adolescence in different cultures

- Harkness, S., & Super, C. (1996). *Parents' cultural belief systems: Their origins, expressions and consequences.* The Guilford Press.
- Le Vine, R. A. (2007). Child rearing as cultural adaptation. In R. A. LeVine & R. S. New (Eds.), *Anthropology and child development: A cross-cultural reader* (pp. 91–101). Blackwell.
- Lansford, J. E., et al. (2021). Cross-cultural similarities and differences in parenting. *Annual Review of Psychology*, *72*, 449–476.

UNIT IV: Childhood and adolescence in Indian communities

- Saraswathi, T. S. (Ed.). (2003). *Indian adolescence in a globalizing world*. Rawat Publications.
- Khalakdina, M. (2008). Human development in the Indian context: A socio-cultural

focus. Sage.
- Lancy, D. F. (2022). *The anthropology of childhood* (3rd ed.). Cambridge University Press.
- Patra, S. (Ed.). (2022). *Adolescence in India: Issues, challenges and possibilities*. Springer. https://doi.org/10.1007/978-981-16-9881-1
- Saraswathi, T.S., Oke, M. (2013). Ecology of Adolescence in India: Implications for Policy and Practice. *Psychol Stud 58*, 353–364. http://dx.doi.org/10.1007/s12646-013-0225-7

Suggested Readings

- Chaudhary, N. (2009). Families and Children in Poverty: Objective Definitions, Subjective Lives. In A. C. Bastos & E. P. Rabinovich (Ed.) *Living in Poverty: Developmental Poetics of Cultural Lives*. Information Age.
- Matsumoto, D. (Ed.). (2001). *The Handbook of Culture and Psychology*. Oxford University Press.
- Dar, A., & Kannan, D. (Eds.). (2023). *Childhood and youth in India: Engagements with modernity*. Palgrave Macmillan.
- Kapadia, S. (2017). *Adolescence in urban India: Cultural construction in a society in transition*. Springer India.
- Trawick, M. (2003). The Person Behind the Family. In V. Das (Ed.), *The Oxford companion to sociology and social anthropology* (Vol. 2, pp. 1158-1178). Oxford University Press.

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

SKILL BASED COURSE

WORKING WITH VULNERABLE FAMILIES AND COMMUNITY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Working with Vulnerable Families and Community	**2**	**0**	**0**	**2**	**As per admission norms**	**Nil**

Learning Objectives

- To develop a conceptual understanding of Vulnerability and the multidimensional nature of vulnerability in families and community
- To evaluate evidence-based intervention approaches for strengthening families and communities.
- To analyze and develop sustainable community intervention models based on legal frameworks and participatory approaches.

Learning Outcomes

The students would be able to:

- Describe structural inequalities and intersectional factors contributing to vulnerability and their implications
- Explain various intervention frameworks to promote family and community welfare
- Develop rights-based intervention strategies and community-driven projects for vulnerable populations.

Practical

(Credits 2; Hours 60)

UNIT I: Understanding Vulnerability in Families and Communities 20 Hours

This unit discusses the concept and factors contributing to vulnerability and their impact on families and communities

- Concept of Vulnerability: Social, Economic, and Psychological Dimensions
- Structural Inequalities and Intersectionality in Vulnerability
- Role of Family and Community Systems in Development and Well-being

- Impact of Adverse Childhood Experiences (ACEs) on Families
- Social Determinants of Health and their Influence on Family Stability

UNIT II: Intervention Strategies and Support Mechanisms 20 Hours

This unit highlights strategies for intervention and approaches for strengthening families and communities

- Trauma-Informed Approaches to Working with Families
- Family Strengthening Programs: Parenting Support, Counselling, and Education
- Community-Based Approaches: Role of NGOs and Peer Networks
- Role of Schools, Healthcare, and Child Protection Services

UNIT III: Advocacy, Policy, and Sustainable Family and Community Engagement 20 Hours

This unit deals with policies and legal frameworks that guide community engagement and also designing intervention programs based on the guidelines

- Rights-Based Approaches and Legal Frameworks for Family Welfare
- Policy Interventions: Government Schemes and Social Protection Programs
- Participatory Methods for Community Engagement and Empowerment
- Ethical Considerations in Working with Vulnerable Populations
- Project: Designing a Community Intervention Program

Essential Readings:

- Fraser, M. W., Kirby, L. D., & Smokowski, P. R. (2014). Risk and resilience in childhood: An ecological perspective (2nd ed.). NASW Press.
- Luthar, S. S. (2015). Resilience and vulnerability: Adaptation in the context of childhood adversities. Cambridge University Press.
- Ungar, M. (2012). The social ecology of resilience: A handbook of theory and practice. Springer.
- Christ, G. H., Boemer, L. K., & Hassey-Dow, J. (2015). Bereavement: Reactions, consequences, and care. American Psychological Association.
- Walsh, F. (2016). Strengthening family resilience (3rd ed.). Guilford Press.
- Gil, E. (2012). Trauma-informed care for children and families. Guilford Press.
- Tobin, G. A., & Montz, B. E. (2019). Evolving vulnerability and social justice: The challenge of resilient communities. Routledge.
- Kumar, S., & Fischer, H. (2013). Community-based approaches to sustainable development. Routledge.
- Patel, V. (2017). *Where there is no psychiatrist: A mental health care manual.* RCPsych Publications.
- Menon, N., & Nigam, S. (2021). *Engaging with inequalities: Family, gender, and law in India.* Orient Blackswan.

- Baru, R. V. (2018). *Health and equity: Perspectives from India.* Oxford University Press.
- Sriram, R (2014). Engaging in Social Intervention (For Learners) Volume I. New Delhi: Concept Publishing.
- Sriram, R (2014). Engaging in Social Intervention (For Mentors) Volume II. New Delhi: Concept Publishing.

Suggested Readings

- Beck, U. (2011). *Risk society: Towards a new modernity.* SAGE.
- Masten, A. S. (2014). *Ordinary magic: Resilience in development.* Guilford Press.
- Ungar, M. (2021). *Multisystemic resilience: Adaptation and transformation in contexts of change.* Oxford University Press.
- Wilkinson, R., & Pickett, K. (2018). *The inner level: How more equal societies reduce stress, restore sanity, and improve everyone's well-being.* Penguin Books.
- Patel, V., & Kleinman, A. (2019). *Mental health in low-resource settings: Challenges and solutions.* Cambridge University Press.

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

SKILL BASED COURSE

PARENTING AND EARLY INTERVENTION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Parenting and Early Intervention	**2**	**0**	**0**	**2**	**As per admission norms**	**Nil**

Learning Objectives

- To understand the foundational concepts of parenting and the various practices across cultures, as well as the challenges contemporary parents face.
- To examine the risk factors, developmental delays, and disabilities in children, along with the tools used for screening and assessment.
- To explore early intervention techniques and their practical implementation for children and families.

Learning Outcomes

The students would be able to:

- Understand parenting practices, identify the challenges, and understand how these challenges impact the parent-child relationship.
- Explain various risk factors and developmental delays in children and will demonstrate proficiency in using appropriate screening tools.
- Demonstrate skills to design, implement, and evaluate evidence-based early intervention programs, focusing on holistic child development and community-based support systems.

Practical
(Credits 2; Hours 60)

UNIT I: Foundations of Parenting **20 Hours**

This unit lays thrust on parenting practices, challenges, and the impact on parents

- Understanding the Parent-Child relationship
- Parenting Practices across cultures
- Challenges of contemporary parenting
- Understanding parental stress and coping mechanisms

Unit II: High-Risk Children, Developmental Delays, and Disabilities 20 Hours

This unit highlights the risk factors and protective factors for children and approaches for screening and assessment

- Understanding Risk Factors: Socioeconomic, Environmental, and Biological Influences
- Identifying Developmental Delays: Screening and Assessment Tools
- Impact of Risk Factors on Child Development and Well-being
- Protective factors for children and addressing diverse Needs

Unit III: Early Intervention Techniques and Practical Implementation 20 Hours

This unit focuses on approaches to care for children and parents through evidence-based approaches

- Approaches to Care of the High-Risk newborn and family
- Designing Intervention Programs: Early Learning and Support Systems
- Parent Coaching and Behavioral Interventions for At-Risk Children
- Collaborations for Holistic Child Development
- Community-Based Approaches to Early Intervention
- Project: Designing an Evidence-Based Parenting or Early Intervention Program

Essential Readings

- Branjerdporn, G., Meredith, P., Strong, J., & Garcia, J. (2017). Associations between maternal–foetal attachment and infant developmental outcomes: A systematic review. *Maternal and Child Health Journal, 21*(3), 540–553.
- Copeland, L., & Parekh, S. (2018). Quality coordinated health care for the high-risk infant: The evolving concept of the medical home. In: Needelman H. & Jackson B. (Eds.), Follow-up for NICU graduates: Promoting positive developmental and behavioral outcomes for at-risk infants. Springer, Cham
- Davidov, M., & Grusec, J. E. (2006). Untangling the links of parental responsiveness to distress and warmth to child outcomes. Child Development, 77(1), 44–58.
- Einav, M., Levi, U., & Margalit, M. (2012). Mothers' coping and hope in early intervention. European Journal of Special Needs Education, 27(3), 265–279.
- Lange, S. M., & Thompson, B. (2006). Early identification and interventions for children at risk for learning disabilities. International Journal of Special Education, 21(3), 108–119. https://files.eric.ed.gov/fulltext/EJ843624.pdf
- Luz, R., George, A., Vieux, R., & Spitz, E. (2017). Antenatal determinants of parental attachment and parenting alliance: How do mothers and fathers differ? Infant Mental Health Journal, 38(2), 183–197.
- Potharst, E. S., Aktar, E., Rexwinkel, M., Rigterink, M., & Bögels, S. M. (2017). Mindful with your baby: Feasibility, acceptability, and effects of a mindful parenting group training for mothers and their babies in a mental health context. Mindfulness, 1-15.
- Winston, R., & Chicot, R. (2016). The importance of early bonding on the long-term mental health and resilience of children. London Journal of Primary Care, 8(1), 12–14.

Suggested Readings

- Chopra, G. (2025). *Systems approach to early childhood development: Bridging theory, policy and practice*. Springer.
- Day, M., Kaul, V., & Bawa Sawhney, S. (Eds.). (2022). *Early childhood education for marginalized children in India: Deconstructing quality*. SAGE Publications India.
- Filippa, M., Kuhn, P., & Westrup, B. (Eds.). (2017). *Early vocal contact and preterm infant brain development: Bridging the gaps between research and practice*. Springer.
- National Scientific Council on the Developing Child. (2012). *Establishing a level foundation for life: Mental health begins in early childhood* (Working Paper No. 6). Center on the Developing Child at Harvard University. https://developingchild.harvard.edu/resources/working-paper/establishing-a-level-foundation-for-life-mental-health-begins-in-early-childhood/
- Pisoni, C., Garofoli, F., Tzialla, C., Orcesi, S., Spinillo, A., Politi, P., & Stronati, M. (2014). Risk and protective factors in maternal–fetal attachment development. *Early Human Development, 90*, S45–S46.
- Rossen, L., Hutchinson, D., Wilson, J., Burns, L., Allsop, S., Elliott, E. J., & Ainsworth, M. D. (2017). Maternal bonding through pregnancy and postnatal: Findings from an Australian longitudinal study. *American Journal of Perinatology, 34*(08), 808–817.
- Singh, M. (2017). *Care of the newborn* (8th ed.). CBS Publishers & Distributors.
- Queensland Government Department of Communities. (n.d.). *Child protection intervention with high-risk infants*. https://www.communities.qld.gov.au/resources/childsafety/practicemanual/intervention-with-high-risk-infants.pdf

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

SKILL BASED COURSE

RESEARCH INFORMED PRACTICES IN DEVELOPMENTAL DISABILITIES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Research Informed Practices in Developmental Disabilities	**2**	**0**	**0**	**2**	**As per admission norms**	**Nil**

Learning objectives:

- To build a strong understanding of theoretical foundations, ethical principles and diverse research methodologies relevant to developmental disabilities.
- To develop the ability to critically analyse assessment tools, intervention models and statistical techniques used in the study of developmental disabilities.
- To enable students to design and conduct culturally relevant and evidence-based research in the field of developmental disabilities.
- To prepare students to apply research findings for policy development, professional practice and academic advancement.

Learning outcome:

Students will be able to-

- Demonstrate advanced knowledge of theoretical frameworks, ethical guidelines and research methodologies in the field of developmental disabilities.
- Critically evaluate assessment tools, intervention models and statistical techniques used in research on developmental disabilities.
- Design and implement culturally relevant, evidence-based research studies related to developmental disabilities.
- Effectively translate research findings into policy recommendations, professional practices and academic contributions

PRACTICAL
(Credits 2; Hours 60)

- To critically analyze a peer-reviewed research study/ Departmental dissertations on disability and inclusion.
- Observation and documentation of motor skills, cognition, communication, social interaction, play behaviour and adaptive skills of a child with disability.
- To review mobile applications- Pre-Assessment Holistic Screening Tool (PRASHAST) and Ped Neuro AIIMS Diagnostics. Report on its accessibility, utility, assessment techniques and validity
- To conduct a short research study by visiting any one organization working in the area of disability, focusing on systematic observation of IEP, assessments reports, daily practices, services, and skill development
- To study five published articles which will guide future research focusing on key ethical concerns, risks, and safeguarding practices for inclusion for children/persons with disability
- Prepare case study of a child/adolescent with disability through multiple field visits using IEP, observations, stakeholder interviews, diagnosis and assessment reports

Essential Readings

- Kumar, S. (2014). *Handbook of disability studies in India*. Atlantic Publishers.
- Nair, M. K. C., & Radhakrishnan, R. (2013). *Child development and developmental disorders*. Orient Blackswan.
- Dash, M. (2016). *Education of children with special needs*. Atlantic Publishers.
- Pandey, R., & Singh, M. (2020). *Educational research: Tools and techniques*. APH Publishing Corporation.
- Kumar, A., & Gupta, S. (2018). *Disability, inclusion and development: Indian perspectives*. Rawat Publications.
- Forshaw, M., Upton, D., & Jones, S. (2011). *Psychology Express: Research methods in psychology* (1st ed.). Pearson.
- SAP SE. (2024). *The inclusive research handbook*. SAP. https://www.sap.com/design/stories-resources/inclusive-research-handbook

Suggested Readings

- Kar, B. R. (2015). *Cognitive development: A cultural and contextual approach*. Sage Publications.
- Singh, A. (2016). *Research methods in psychology*. Pearson India.
- Mayers, A. (2013). *Introduction to statistics and SPSS in psychology*. Pearson.
- Mukhopadhyay, R. (2019). *Understanding disability: Theoretical and empirical perspectives*. Rawat Publications.
- Narayan, J., & John, A. (2017). *Intellectual disability in India: Challenges and practices*. NIMH Publications.
- Sharma, U., & Deppeler, J. (Eds.). (2018). *Inclusive education: Perspectives and practices in India*. Sage Publications India.

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

Annexure-3

UNIVERSITY OF DELHI

Department of Home Science

Faculty of Science

1- Year MSc Human Development & Childhood Studies

Coursework + Research Track

Department of Home Science

University of Delhi

Course Credit Structure NEP

2025

The Department of Home Science offers a Master's Programme in Human Development and Childhood Studies, focusing on understanding human development across the lifespan within a culturally diverse, dynamic, and complex world. The programme adopts contextual and systemic frameworks to explore developmental and relational processes through research, teaching, and practical engagement.

With a strong commitment to interdisciplinary learning, the curriculum integrates classroom instruction with meaningful field visit experiences. It places particular emphasis on recognising and studying the heterogeneity of children and adults across diverse social, cultural, and institutional settings.

Program Specific Objectives:

- To study the domains of human development from a lifespan perspective.
- To examine the interaction between the child and the socio-cultural systems, including educational settings.
- To promote competence in scientific study, research in the field, and the use of relevant assessment measures for children.
- To develop sensitivity and skills in working with children and families.
- To acquire a working knowledge of counselling children and families.
- To plan and implement programmes for children.
- To create awareness about children and families living in difficult circumstances.
- To provide students with a situated career exposure through internships and placements.

Program Specific Outcomes:

- The students will learn strategies for effective capacity building, implementation and assessment of early childhood education and development programmes.
- Students will learn support and advocacy skills for Gender Justice, Child Rights, Inclusion, and Adoption, which will help students to gain a professional advantage.
- Students will learn to interpret and discuss current research trends related to children's evolving interactions with media.
- Students will engage with the diversity and plurality of childhood in India and gain knowledge of the status of children in India.
- Students will acquire skills to critically analyse the concerns related to specific groups and will understand the processes and principles of 'rights-based

programming'.

- Students will apply resilience frameworks and theoretical perspectives to understand child behaviour in diverse contexts.
- Students will examine and analyse the significance of children's social and ecological contexts, study the approaches and practices for inclusion and empowerment of children and families.
- Students will develop a holistic understanding of the educational ecosystem, processes and practices with reference to traditional knowledge and belief systems that have shaped parenting in India

DEPARTMENT OF HUMAN DEVELOPMENT AND CHILDHOOD STUDIES

1 Yr- M.Sc. Human Development and Childhood Studies

COURSEWORK AND RESEARCH

Course Credit Scheme

Program Structure-2: (PG with Coursework and Research)

Semester	**Core Courses**		**Elective Course**		**Project work**		**Total Credits**
	No. of courses	**Total credits**	No. of courses	**Total Credits**	No. of courses	Total credits	
I	2	8	2	8	1	6	22
II	2	8	2	8	1	6	22
Total Credits for the course	16		16		12		44

List of PGCF Courses of M.Sc. Human Development and Childhood Studies
COURSEWORK AND RESEARCH
(Semester I and II of the One-year program)

List of PGCF Courses to be offered to students opting for Structure-2 (Coursework + Research) of M.Sc. in 1st and 2nd Semester of One year Course							
Type of Course	**Type**	**Semester**	**Name of the Courses**	**Credits in each course**			
				Lecture	**Tutorial**	**Practical**	**Total**
Semester – I							
Discipline Specific Core Course	**DSC 1**	**I**	**Children and Media**	**2**	**0**	**2**	**4**
Discipline Specific Core Course	**DSC 2**	**I**	**Fundamentals of Mental Health in Childhood**	**3**	**1**	**0**	**4**
Discipline Specific Elective Course	**DSE**	**I**	**Statistics and Data Management Gender Justice and Empowerment/ Care and Wellbeing Across Lifespan**	**As per the specific course**			**4x2=8**
General Elective Course	**GE 1**	**I**	**From the Pool of GEs**	**As per the specific course**			**4**
Dissertation Project/ Entrepreneurship	**DP 1**	**I**	**Dissertation/Academic project/Entrepreneurship**	**0**	**0**	**6**	**6**
Semester-II							
Discipline Specific Core Course	**DSC 3**	**II**	**Child Development and Indian Knowledge Systems**	**2**	**0**	**2**	**4**
Discipline Specific Core Course	**DSC 4**	**II**	**Language and Cognition in Development Studies**	**3**	**1**	**0**	**4**
Discipline Specific Elective Course	**DSE**	**II**	**Organization and Management of Programmes for Adults/ Sociology of Family and Community Care/ Childhood and Adolescence Across Ecological Settings**	**As per the specific course**			**4x2=8**
General Elective Course	**GE 2**	**II**	**From the Pool of Ges**	**As per the specific course**			**4**
Dissertation Project/ Entrepreneurship	**DP 2**	**II**	**Dissertation**	**0**	**0**	**6**	**6**
Pool of Discipline Specific Elective Courses to be offered in the 1st Semester	**i.**	**Statistics and Data Management**					
	ii.	**Gender, Justice and Empowerment**					
	iii.	**Care and Wellbeing Across Lifespan**					
Pool of Discipline Specific Elective Courses to be offered in the 2nd Semester	**iv.**	**Organization and Management of Programmes for Adults**					
	v.	**Sociology of Family and Community Care**					
	vi.	**Childhood and Adolescence Across Ecological Settings**					
Generic Elective Courses to be offered in 1st and 2nd	**i.**	**Parenting in contemporary India**					
	ii.	**Resources and Sustainability**					

Semesters	**iii.**	**Organizational Communication: Tools and Techniques**
	iv.	**Lifestyle Modifications for Optimal Health**
	v.	**Community Nutrition Assessment**
	vi.	**Dyeing and printing with Natural Dyes**
	vii.	**Appreciation of Indian Textiles**

Semester I

DISCIPLINE SPECIFIC CORE COURSE

CHILDREN AND MEDIA

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Children and Media	4	2	0	2	As per admission norms	Nil

Learning Objectives:

- To understand the changing representations of childhood in media
- To critique media content and analyse its underlying messages
- To examine the relationship between media and children's experiences and development
- To explore research trends on children's evolving engagement with media

Learning Outcomes:

Students will be able to-

- Identify and explain how representations of childhood have changed across different media forms.
- Evaluate media content and articulate its implicit messages, biases, and stereotypes.
- Analyse the influence of media on children's behaviour, identity formation, and everyday experiences.
- Interpret and discuss current research trends related to children's evolving interactions with media.

THEORY

(Credits 2; Hours 30)

UNIT I: Different forms of media with reference to children 6 Hours

This unit introduces the different forms of media that children engage with in their daily lives, including print, electronic, and digital platforms.

- Children's use and benefit from print forms
- Radio and its extensive outreach
- Television medium and its significance in a changing world
- Folk forms of media such- puppetry, drama and art
- Stories, their relevance and changing contexts

UNIT II: Content, age related understanding and comprehension 8 Hours

This unit focuses on how media shapes and supports children's cognitive growth by examining

how different types of content engage their attention and stimulate thinking.

- Linking children's thinking skills to media
- Identifying materials that engage children's attention
- Analysis of content in relation to appeal for children
- Balancing entertainment with need for information and stimulation
- Media literacy

UNIT III: Children in media **8 Hours**

This unit focuses on how children are portrayed and utilized within media, highlighting the implications of these representations on their development.

- Children's social presence and notions of childhood in media
- Critical review of using children in media settings in relation to age appropriateness, social significance, stereotypes etc.
- Awareness and understanding of influences of the culture of media on growth and development of child participants
- Identify components of a media policy and law for children; Protecting children's feelings, emotions and privacy in the world of media, social media and AI

UNIT IV: Special features for creating content for children's media **8 Hours**

This unit focuses on the critical aspects of designing meaningful and inclusive media content for children, grounded in research and understanding of their perceptions.

- Research issues in developing content for children
- Children's perceptions as viewers; Children's sense of identification with media images and self
- Identifying significance of issues such as plurality, gender stereotypes, coexistence of multiple cultures, abilities and age typing
- Role of formative and summative research in media

PRACTICAL

(Credits 2; Hours 60)

- To systematically study children's media usage patterns, modes of interaction, and responses to various forms of media, and to identify children's perspectives using appropriate qualitative and quantitative research tools.
- To critically review, analyze, and document educational media designed for children, with reference to age-appropriateness, pedagogical value, and developmental relevance.
- To undertake a field visit to a media house and document the processes involved in the development of children's media content, including ideation, scripting, production, and dissemination.
- To develop competencies in understanding the principles and methodologies of formative research, including its conduct and application in informing scriptwriting and media production for children.
- To conduct a structured survey to assess parental and community perceptions regarding children's media exposure and consumption, and to formulate evidence-based recommendations based on the findings.

- To prepare a detailed analytical report evaluating children's television programmes using normative features of physical, cognitive, social, and emotional growth and development as review criteria.

Essential Readings

UNIT I

- Drotner, K. & Livingstone, S. (Eds.). (2008). *International handbook of children, media and culture.* Sage
- Menon, S., & Rao, S. (Eds.). (2020). *Children's books: An Indian story*. Parag Initiative, Tata Trusts.
- Prakash, S. & Mathur, P. (2000). *Children and TV*. NCERT.

UNIT II

- Singer D.G. & Jerome L. (2012). *Handbook of children and media.* Sage.
- Rao, S. (2022). *Introduction to media literacy*. SAGE Publications India.
- Olson, D. & Rampaul, G. (2013). *The Routledge international handbook of children, adolescents and media*. Routledge.
- Kakar, S. (2012). *The inner world: A psycho-analytic study of childhood and society in India* (4th ed.). Oxford University Press.

UNIT III

- Lemish, D. (2015). *Children and Media: A Global Perspective*. Wiley Blackwell.
- Banaji, S. (2017). *Children and media in India: Narratives of class, agency and social change*. Routledge.
- Raman, U., & Kasturi, S. (Eds.). (2023). *Childscape, mediascape: Children and media in India*. Orient BlackSwan.

UNIT IV

- Brennan, B. (2012). *Qualitative research methods for media studies*. Taylor & Francis.
- Holland, P. (2004). *Picturing childhood: The myth of the child in popular imagery*. I.B. Tauris.
- Molina, E. (2025). Balancing the Digital Scales: Screen Time Management in Early Childhood Education. In Digital Innovations in Education. World Bank.

Suggested Readings

- Livingstone, S. (2002). *Young people and new media.* Sage.
- Nightingale, A. (2024). *Screen time and children: Guidelines for parents and educators*. Creative Quill Press.
- Livingstone, S. (2009). *Children and the internet: Great expectation, challenging realities.* Polity Press
- Arumugam, C. T., Said, M. A., & Nik Farid, N. D. (2021). Screen-based media and young children: Review and recommendations. *Malaysian family physician : the official journal of the Academy of Family Physicians of Malaysia*, *16*(2), 7–13. https://doi.org/10.51866/rv1143
- Christakis, D.A. & Hale, L. (2025). Handbook of children and screens: Digital media, development and well-being from birth through adolescence. Springer Open.

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

DISCIPLINE SPECIFIC CORE COURSE

FUNDAMENTALS OF MENTAL HEALTH IN CHILDHOOD

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title and code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical		
Fundamentals of Mental Health in Childhood	**4**	**3**	**1**	**0**	**As per admission norms**	**Nil**

Learning Objectives

- To introduce key concepts of childhood mental health and developmental psychopathology.
- To explain major theoretical approaches in understanding child behaviour.
- To examine childhood stress, trauma, maltreatment, and resilience-building within family and ecological systems.
- To develop understanding of emerging issues such as digital mental health and the neurodiversity movement.
- To enable students to apply developmental and contextual frameworks to analyse risk, protection, adaptation, and pathways in childhood.

Learning Outcomes

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

- Define and explain childhood mental health concepts, developmental psychopathology principles, and cultural influences.
- Differentiate between normal and abnormal behaviour using theoretical, developmental and contextual criteria.
- Identify and analyse risk factors, protective factors, and the impact of trauma, stress, and family environment on child development.
- Apply resilience frameworks and theoretical perspectives to understand child behaviour in diverse contexts.
- Evaluate emerging trends such as digital mental health and neurodiversity, and discuss their implications for practice and inclusion.

THEORY

(Credits 3; Hours 45)

UNIT 1: Introduction to Childhood Mental Health **12 Hours**

- Definition of mental health and well-being in childhood
- Abnormal Behavior in Children: (Competence, Developmental Pathways)
- Protective vs. risk factors
- Family context and mental health

UNIT 2: Theoretical Perspectives **12 Hours**

- Developmental Psychopathology perspective
- Psychological perspective
- Family, Social and Cultural perspective
- Biomedical model, Cognitive Behavioural perspective

UNIT 3: Childhood Stress, Trauma, and Resilience **12 Hours**

- Trauma and Stress
- Maltreatment, Abuse and neglect
- Non-accidental trauma
- Building resilience in Children

UNIT 4: Emerging Issues and Future Trends **9 Hours**

- Developmental Psychopathology in India
- Digital mental health for children
- Neurodiversity movement and inclusive practices
- Current global research directions

TUTORIAL

(Credits 1; Hours 15)

- Group Discussions
- Book Review
- Class Presentations
- Group Projects
- Media Analysis (Movies, documentaries, serials, songs, advertisements, social media
- posts)
- Any creative production (group activity)

Essential Readings

UNIT I: Introduction to Childhood Mental Health

- Laver-Bradbury, C., Thompson, M. J. J., Gale, C., & Hooper, C. M. (Eds.). (2021). *Child and adolescent mental health: Theory and practice* (3rd ed.). CRC Press.
- Kiragasur, R. M., Kommu, J. V., Kumar, C. N., Shetty, V. B., Parthasarathy, R., & Math, S. B. (2020). *Child and adolescent mental health: A manual for medical officers*. National Institute of Mental Health and Neuro Sciences (NIMHANS). https://nimhans.co.in/wp-content/uploads/2021/09/Child-and-Adolescent-Mental-Health_A-Manual-for-Medical-Officers.pdf

UNIT II: Theoretical Perspectives

- Cicchetti, D., & Cohen, D. J. (2006). *Developmental psychopathology: Theory and method* (2nd ed.). John Wiley & Sons.
- Kakar, S. (1981). *The inner world: A psycho-analytic study of childhood and society in India*. Oxford University Press.

UNIT III: Childhood Stress, Trauma and Resilience

- Kapur, M. (2011). *Counselling Children with Psychological Problems*. Pearson.
- Fraser, M. W., Kirby, L. D., & Smokowski, P. R. (2014). *Risk and resilience in childhood: An ecological perspective* (2nd ed.). NASW Press.
- Brewer-Smyth, K. (2022). *Adverse childhood experiences: The neuroscience of trauma, resilience and healing throughout life course*. Springer
- Herman, J.L. (1997). *Trauma and Recovery*. Hachette.
- Mash, E. J. & Wolfe, D.A. (2016). *Abnormal Child Psychology* (6th ed.). Cengage Learning.

UNIT IV: Emerging Issues and Future Trends

- Kapur. M. (1995). *Mental Health of Indian Children*. Sage.
- Chavan, B.S., Gupta, N., Arun, P., Sidana, A. & Jadhav, S. (2012*). Community Mental Health in India.* Jaypee.
- O'Reilly, M., Dogra, N., Levine, D., & Donso, V. (2024). *Digital media and child & adolescent mental health*. SAGE Publications Ltd.
- Shulman, C. (2016). *Research and practice in infant and early childhood mental health*. Springer Cham.

Suggested Readings

- Beck, U. (2011). *Risk society: Towards a new modernity.* SAGE.
- Masten, A. S. (2014). *Ordinary magic: Resilience in development.* Guilford Press.
- Patel, V., & Kleinman, A. (2019). *Mental health in low-resource settings: Challenges and solutions.* Cambridge University Press.
- Ungar, M. (2012). *The social ecology of resilience: A handbook of theory and practice*. Springer.
- Wilkinson, R., & Pickett, K. (2018). *The inner level: How more equal societies reduce stress, restore sanity, and improve everyone's well-being.* Penguin Books.
- Nicholson, J., Perez, L., Kurtz, J. Bryant, S. & Giles, D. (2023). *Trauma-informed practices for Early Childhood Educators.* Routledge.
- Sen, S. (2015). *All you need is love: The art of mindful parenting.* Harper Collins India.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

STATISTICS AND DATA MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Statistics and Data Management	4	3	0	1	As per admission norms	Nil

Learning Objectives

- To develop understanding of fundamental and advanced statistical concepts used in research and data analysis.
- To enable students to apply descriptive and inferential statistics for real-world decision-making.
- To strengthen ability to formulate hypotheses, select appropriate statistical tests, and interpret outputs.
- To prepare students for quantitative research, industry analytics, and academic data projects.
- To train students in using Excel and SPSS for data handling, visualization, and interpretation.

Learning Outcomes

The students would be able to:

- Explain key concepts in descriptive and inferential statistics.
- Organize, clean, and summarize datasets using appropriate statistical tools.
- Apply probability distributions, correlation, regression, and hypothesis testing.
- Use Excel and SPSS for data visualization, statistical testing, and reporting.
- Interpret statistical outputs and draw valid conclusions for research decisions.
- Design and execute quantitative data analysis workflows independently.

THEORY

(Credits 3; Hours 45)

UNIT I: Introduction and descriptive Statistics **12 Hours**

This unit will introduces the foundations of statistics and techniques for summarizing and describing data.

- Definition, scope, and applications of statistics
- Types of data: qualitative and quantitative
- Scales of measurement
- Classification & tabulation of data
- Graphical and visual representations
- Measures of central tendency: mean, median, mode
- Measures of dispersion: range, variance, standard deviation, coefficient of variation
- Skewness and kurtosis: meaning and interpretation

UNIT II: Probability and Probability Distributions 10 Hours

This unit explores probability concepts and major statistical distributions.

- Basic probability concepts: Addition & multiplication theorems
- Random variables: discrete and continuous
- Binomial and Normal distributions
- Sampling theory & sampling distributions
- Central Limit Theorem

UNIT III: Correlation and regression 8 Hours

This unit focuses on analysing relationships between variables.

- Correlation: Pearson and Spearman correlation
- Simple linear regression: model, estimation, interpretation
- Multiple linear regression: assumptions, multicollinearity, model building

UNIT IV: Hypothesis Testing and Non-Parametric Methods 15 Hours

This unit introduces hypothesis testing frameworks and non-parametric alternatives for non-normal data.

- Concept of hypothesis: null & alternative
- Types of errors, significance levels, p-value
- Parametric tests:
    - z-test
    - t-test (one sample, independent, paired)
    - Chi-square test
- Non-parametric tests:
    - Mann–Whitney U test
    - Wilcoxon signed-rank test
    - Kruskal–Wallis test
- Interpretation and reporting of statistical results

- Research Conclusion and recommendation

PRACTICAL

(Credits 1; 30 hours)

1. Data Entry, Coding & Cleaning: Importing data, handling missing values, variable labels, Excel formulas.
2. Descriptive Statistics & Visualization: Mean, Standard Deviation, frequency tables, histograms, boxplots (Excel + SPSS).
3. Cross-Tabulation & Chi-Square Test: PivotTables in Excel; Crosstabs in SPSS.
4. Correlation Analysis: Pearson & Spearman correlations; scatterplots.
5. Simple Linear Regression: Trendline in Excel; Regression output in SPSS.
6. Multiple Regression: Model summary, coefficients, interpretation using SPSS.
7. t-Tests: Independent, paired, and one-sample t-tests in SPSS.
8. ANOVA (One-way & Two-way): Running ANOVA and post-hoc analysis.
9. Non-Parametric Tests: Mann-Whitney, Wilcoxon, Kruskal–Wallis in SPSS.
10. Report Generation & Interpretation
11. Preparing APA-style tables, graphs, and interpretations in Excel/SPSS.

Essential Readings:

UNIT I

This unit describes the foundations of statistics and techniques for summarizing and describing data.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.). Pearson Prentice Hall.
- Bernard, H. R. (2000). *Social research methods: Qualitative and quantitative approaches*. Sage.
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.). CreateSpace Independent Publishing Platform.
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*. Wiley.

UNIT II

This unit deals with the probability concepts, rules of probability, discrete and continuous distributions (Binomial, Poisson, Normal).

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*.

UNIT III

This unit focuses on relationship between variables, correlation coefficients, simple and multiple regression, regression assumptions.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Muijs, D. (2004). *Doing quantitative research in education with SPSS.* Sage.

UNIT IV

The unit deals with statistical inference such as t-tests, ANOVA, Chi-square, non-parametric tests (Mann-Whitney, Wilcoxon, Kruskal-Wallis), decision making.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*.
- Muijs, D. (2004). *Doing quantitative research in education with SPSS.*

Suggested Readings

- Field, A. (2025). *Discovering Statistics Using IBM SPSS Statistics* (6th ed.). Sage.
- Kalyanaraman, K., Ramanathan, H. N., & Harikumar, P. N. (2025). *Statistical Methods for Research: A Step-by-Step Approach Using IBM SPSS.* Atlantic Publishers.
- Healey, J. F., & Donoghue, C. (2021). *Statistics: A Tool for Social Research and Data Analysis* (11th ed.).

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

GENDER, JUSTICE AND EMPOWERMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Gender, Justice and Empowerment	4	2	0	2	As per admission norms	Nil

Learning Objectives:

- To develop an in-depth understanding of gender as a social construct and the frameworks of social justice and human rights.
- To critically examine legal, policy and institutional mechanisms that promote or hinder gender equality.
- To build analytical skills to evaluate the processes of empowerment, agency and development across diverse socio-cultural contexts.
- To enable students to apply gender-sensitive perspectives in addressing contemporary issues, designing interventions and advocating for gender justice.

Learning Outcomes:

Students will be able to:

- Demonstrate comprehensive knowledge of gender theories, social justice perspectives and structures influencing gendered experiences.
- Analyse legal provisions, policies and institutional practices related to gender equality and justice.
- Design and evaluate gender-responsive programmes, strategies and interventions for empowerment.
- Apply gender-sensitive, rights-based and intersectional perspectives in professional, community and policy contexts.

THEORY

(Credits 2; Hours 30)

UNIT I: Foundations of Gender and Social Justice 7 Hours

This unit provides an understanding of the foundational concepts of gender and social justice, examining how identities and roles are shaped within social and cultural contexts.

- Conceptualizing gender, gender identity and intersectionality
- Feminist theories: liberal, radical, socialist, postmodern, Dalit feminist perspectives
- Social justice frameworks and human rights principles
- Structures of patriarchy and gendered power relations

UNIT II: Gender, Law and Policy Frameworks 7 Hours

This unit focuses the legal and policy frameworks that promote gender equality, highlighting constitutional provisions, key legislations, international conventions, and policy strategies for gender inclusion and empowerment.

- Constitutional provisions related to gender equality in India
- Key legislations and gender
- International conventions and frameworks

UNIT III: Empowerment, Agency and Development 8 Hours

This unit focuses on the concept of empowerment through gender-focused development frameworks, highlighting key enablers and community processes that promote agency and gender justice.

- Concept of empowerment
- Gender and development approaches: analysis of key theoretical frameworks that address gender inequalities
- Enablers of Gender Justice
- Community Processes for Justice and Empowerment

UNIT IV: Contemporary Issues and Strategies for Gender Justice 8 Hours

This unit focuses on contemporary gender justice challenges and explores strategies ranging from advocacy to policy and media interventions to combat inequalities, violence, and emerging issues.

- Gender-based violence: forms, causes, prevention and redressal
- Gender and media, representation, social norms and stereotypes
- Gender in workplaces: discrimination, care labour, unpaid work, glass ceiling
- Emerging issues: gender diversity, gender and technology, cyber safety
- Advocacy, campaigns, and programme planning for gender justice

PRACTICAL

(Credits 2; Hours 60)

- To conduct a survey with male and female participants, to study gender variations in roles and responsibilities shared at home
- Create a report containing the following items:
    - Any five news articles, illuminating contemporary issues relevant to gender studies
    - Key points from classroom discussions on relevance and influence of these issues among the students
- Analyse gender portrayals of a movie, videoclip or episode commonly viewed by the students. Reflect on the portrayals of masculinity, femininity, gender typing and gender stereotyping
- To design a workshop on gender stereotypes, gender neutral roles and gender equity
- Seminar/ Webinar or Field visit to NGO that provides legal aid, rehabilitation and skill development services

Essential Readings

UNIT I: Foundations of Gender and Social Justice

- Bhasin, K. (1993). *What is patriarchy?* Kali for Women, Raj Press.
- Bhasin, K. (2000). *Understanding gender.* Kali for Women, Raj Press.
- Bhasin, K. (1986). *Feminism and its relevance in South Asia*. Kali for Women, R. S. Printers.
- Bhasin, K. (2004). *Exploring masculinity*. New Delhi: Women Unlimited, Raj Press.

UNIT II: Gender, Law and Policy Frameworks

- Agnes, F. (1999). *Law and gender inequality: The politics of women's rights in india.* Oxford University Press.
- Supreme Court of India. (2023). *Handbook on combating gender stereotypes*; https://cdnbbsr.s3waas.gov.in/s3ec0490f1f4972d133619a60c30f3559e/uploads/2024/01/2024012544.pdf

UNIT III: Empowerment, Agency and Development

- Agosin, M. (2003). *Women, Gender and Human Rights: A Global Perspective* (1st ed.). Rawat.
- Bhatia, R. (2021). *Gender: A Sociological Understanding*. Pearson.
- Geetha, V. (2007). *Patriarchy*. Stree Publications.
- Kishwar, M. (1999*). Off the beaten track: Rethinking gender justice for Indian wome*n. Oxford University Press.
- Phadke, S., Khan, S., & Ranade, S. (2011). *Why loiter?: Women and risk on Mumbai streets*. Penguin Books India.

UNIT IV: Contemporary Issues for Gender Justice

- Manjrekar, N. (2020). *Gender and education in India.* Akar Books.
- Singh, L., & Sinha, S. S. (Eds.). (2024). *Gender in modern India: History, culture, marginality*. Oxford University Press.
- Kumar, P. (Ed.). (2022). *Sexuality, abjection and queer existence in contemporary India*. Routledge India.
- Pande, R., & Vanka, S. (Eds.). (2020). *Gender violence: International perspectives*. IBP Books.
- Mohanty, M. (2008). *Class, caste and gender.* Sage.

Suggested Readings

- Fischer, A.H. (2000). *Gender and emotion: Social psychological perspectives*. Cambridge University Press.
- Biswal, T. (2006). Human rights, gender and environment. Viva Books.
- Mukhopadhyay, M. & Singh, N. (Eds.). (2007). *Gender, justice, citizenship and development.* Zubaan Publication.
- Irudayam, A., Mangubhai, F., & Lee, J. (Eds.). (2017). *Dalit women speak out: Caste, class and gender violence in India*. Zubaan Books.
- Vanita, R. (2005). *Love's rite: Same-sex marriage in India and the West*. Palgrave Macmillan.
- King, B.M. (2013). *Human Sexuality Today*. Pearson.
- Mehendale, A., & Raha, S. (2020, May). *Schools as safe spaces: An analysis of public narratives and policy actions in Bengaluru* (Working Paper, Education and the Urban in India). Perspectivia.net. https://perspectivia.net/servlets/MCRFileNodeServlet/pnet_derivate_00003998/Mehendale_Raha_final.pdf

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
CARE AND WELLBEING ACROSS LIFESPAN

CREDIT DISTRIBUTION, ELIGIBLITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Care and Wellbeing Across Lifespan	4	2	0	2	As per admission norms	Nil

Learning Objectives

- To understand major theories and perspectives related to care and wellbeing across the lifespan in social and developmental contexts.
- To examine developmental needs, risk factors and transitions influencing wellbeing.
- To build skills for promoting wellbeing through counselling, supportive care and reflective practice.
- To understand policies, programmes, and institutional support systems related to care and wellbeing.

Learning Outcomes

The students will be able to

- Describe key concepts and models of care, wellbeing and development.
- Identify life-stage needs and vulnerabilities across the lifespan.
- Use wellbeing tools and apply basic counselling-informed strategies.
- Review relevant policies and programmes related to care and wellbeing
- Prepare short intervention plans and reflective field-based reports.

THEORY

(Credits 2; Hours 30)

UNIT I: Care and Human Development **7 Hours**

This unit explains the concept of care, its relevance and the different settings in which care is required across the lifespan.

- Meaning, nature and dimensions of care
- Ethics of care and rational responsibility
- Care needs in disability, chronic illness and mental health concerns
- Forms of care: family and institutional settings

UNIT II: Well-being and Human Development **7 Hours**

This unit focuses on wellbeing, life transitions, and factors that influence wellbeing at different stages.

- Meaning and components of wellbeing: Psychological, emotional, social and spiritual
- Life transitions: Stress, loss and major developmental changes
- Models of wellbeing: (PERMA, psychological wellbeing and life satisfaction)
- Factors promoting wellbeing: Resilience, coping skills and social support

UNIT III: Care and Well-being, from Birth to Adolescence **8 Hours**

This unit focuses on the care needs and well-being concerns from pregnancy to adolescence.

- Prenatal, antenatal, maternal and neonatal care
- Care of infants and young children, including developmental risk
- Adolescent health and well-being: mental health, identity and peer relations
- School and community-based health and wellbeing programmes

UNIT IV: Care and Well-being in Adults and Elderly **8 Hours**

This unit explains wellbeing concerns in adulthood and ageing, including caregiving, health needs and support systems.

- Wellbeing needs in young adulthood, midlife and later adulthood
- Work–life balance, stress and burnout
- Elderly: physical, cognitive and emotional changes
- Support systems: counselling approaches, mindfulness, institutional and policy support

PRACTICAL

(Credits 2; Hours 60)

- To develop, administer, score, and interpret standardized wellbeing assessment tools, including the WHO Wellbeing Index, Psychological Wellbeing Scale, and Life Satisfaction Scale.
- To prepare a comprehensive case profile covering two distinct life stages, supported by relevant documentation on learning and development, and to undertake a reflective analysis of wellbeing-enhancing strategies employed or recommended.
- To engage in structured fieldwork through a visit to an old-age home, childcare centre, or community health programme, and to document observations related to care practices and wellbeing promotion.
- To design a brief, context-specific wellbeing promotion plan for a selected population group, grounded in theoretical frameworks and empirical evidence.
- To conceptualize, organize, and conduct a workshop or seminar aimed at strengthening participants' understanding of care, wellbeing, and supportive practices.

Essential Readings

UNIT I: Care and Human Development

- Carter, M. (Ed.). (2025). *The Bloomsbury handbook of care ethics*. Bloomsbury Academic.
- John, M., & Wichterich, C. (Eds.). (2021). *Who cares? Care extraction and the struggles of Indian health workers*. Yoda Press.
- Daleman & Helton (2018). *Chronic illness care: Principles and practice*. Springer.
- Ghai, A. (2015). *Rethinking Disability in India.* Routledge

UNIT II: Well-being and Human Development

- Masten, A. (2021). *Resilience in development: Discoveries and emerging frontiers.* Springer.
- Seligman, M. E. P. (2011). *Flourish.* Atria Publications
- Harvard Center on the Developing Child. (2020). *Building core capabilities for life*. Harvard University. https://developingchild.harvard.edu/resources/building-core-capabilities-for-life/

UNIT III: Care and Well-being, from Birth to Adolescence

- Humphreys, K. (2022). *Child development: Understanding risk and protective factors.* OUP.
- WHO. (2023). *World mental health report 2023: Transforming mental health for all.* https://www.who.int/publications/i/item/9789240049338

UNIT IV: Care and Well-being in Adults and Elderly

- Beard, J. et al. (2019). *Global Ageing Report: Healthy Ageing 2030.* WHO.
- Papalia, D. & Martorell, G. (2021). *Experience human development.* McGraw-Hill.
- Chao, R.C. (2015). *Counselling Psychology: An integrated positive psychology approach.* Wiley Blackwell.
- Chatterjee, P. (2019). *Health and wellbeing in late life: Perspectives and narratives from India*. Springer Open.

Suggested Readings

- Viner, R. M., Ozer, E. M., Denny, S., Marmot, M., Resnick, M., Fatusi, A., & Currie, C. (2012). Adolescence and the social determinants of health. *Lancet (London, England)*, *379*(9826), 1641–1652. https://doi.org/10.1016/S0140-6736(12)60149-4
- UNICEF. (2023). *State of the world's children report: For every child, mental health*. UNICEF. https://www.unicef.org/reports/state-of-worlds-children
- Misra, G. (2009). *Psychology in India (Vol 1): Basic Psychological Processes and Human Development.* Pearson.
- Kumar, N. (2018). *Mental health and well-being: An Indian psychology perspective*. Routledge.
- Roy, P., Sanyal, S. & Patel, S. (2022), *The elderly in India: A collection of selected writings.* Alternotes Press.

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

Semester II

DISCIPLINE SPECIFIC CORE COURSE

CHILD DEVELOPMENT AND INDIAN KNOWLEDGE SYSTEMS

CREDIT DISTRIBUTION, ELIGIBLITY AND PRE REQUISITES OF THE COURSE

Course title and code	Credits	Credit distribution of the course			Eligibility criteria	Prerequisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Child Development And Indian Knowledge Systems	**4**	**2**	**0**	**2**	**As per Admission Norms**	**Nil**

Learning Objectives

- To explore the traditional Indian knowledge system's perspective on child development, including concepts from *Ayurveda, Vedas*, and other ancient scriptures.
- To understand prenatal developmental stages from Indian traditional knowledge.
- To understand how traditional practices and beliefs have shaped parenting in India.

Learning outcomes

- The students will be able to demonstrate a comprehensive understanding of child development from traditional Indian perspectives.
- The students will be able to apply knowledge of traditional Indian practices such as prenatal education and philosophical foundations of development.
- The students will be able to understand the cultural context, religious influence and emerging trends that shape child development.

THEORY

(Credits 2; Hours 30)

UNIT I: Prenatal Development and Indian knowledge System 7 Hours

This unit explores prenatal development, highlighting the biological, physical, and psychological changes that occur from conception to birth. It also integrates perspectives from the Indian Knowledge System, emphasizing traditional wisdom, holistic practices, and cultural understandings related to maternal and fetal well-being.

- Holistic approach to prenatal development, Risks factors associated with prenatal development
- Child care practices: Beliefs and indigenous knowledge about prenatal care (The *Samskaras*)

- Traditional medical practices in India

UNIT II: Childhood, Socialization and Samskar **8 Hours**

This unit focuses on childhood within the cultural context of socialization and samskar, examining traditional child-rearing practices, family dynamics, and the influence of philosophy, spirituality, and evolving parenting approaches.

- Understanding Indian Samskaras: Cultural context and religious influence, role of family, independence vs interdependence, religion and spirituality structure and dynamics, family systems (Nuclear/Joint), role of elders, gender roles
- Traditional child rearing: Beliefs and practices, *Ayurveda,* Indian philosophical writings (*Vedas, Panchkosha* theory), Yoga
- Parent-child relationship: Care, respect and faith, contemporary parenting (generation gap)

UNIT III: **Indigenous Philosophy and Traditions** **8 Hours**

This unit focuses on indigenous philosophies and traditional frameworks, exploring concepts like Purushartha, Ashrama, and classical theories to understand childhood, emotions, and cultural narratives through stories and folk traditions

- Philosophical foundations: Concept of *Purushartha (Dharma, Artha, Kama, Moksha)*
- Understanding stages of the life span through *Ashrama* theory
- Childhood in traditional texts and media: Myths, stories, literature, folk tales, folk songs, street plays etc.
- Understanding emotions: Rasa theory, temperament (*prakriti*)

UNIT IV: Contemporary Child Development and Indian Knowledge Systems 7 Hours

This unit focuses on integrating indigenous knowledge systems with contemporary child development practices to promote wellbeing, culturally rooted education and ethical understanding in a cross-cultural context.

- Promoting wellbeing: yoga and other Indic traditions
- Curriculum and pedagogy: indigenous knowledge and methods, culturally rooted education, experiential learning, value-based education
- Integrating indigenous and contemporary theories of child development
- Evolving ethics in the cross-cultural context

PRACTICAL

(Credits 2; Hours 60)

- To document and critically analyze the role of rites of passage (*Samskaras*) in shaping adolescent identity and socio-cultural development in the Indian context.
- To design, administer, and analyze a survey assessing awareness and practices related to prenatal health among expectant mothers.
- To conduct an in-depth case study examining prenatal care practices, integrating medical, cultural, and familial dimensions.
- To document and review ethno-medical practices related to maternal and child health using

secondary sources such as documentaries, newspapers, and peer-reviewed research articles.

- To undertake a field-based exploration of traditional and contemporary child-rearing practices across diverse Indian socio-cultural settings.
- To design and perform a role-play activity demonstrating various strategies that promote child socialization (e.g., storytelling, festivals, rituals, and play), followed by a reflective analysis of their impact on child development within the Indian cultural framework.

Essential Readings

UNIT I: Prenatal Development and Indian Knowledge System

- Choudhry U. K. (1997). Traditional practices of women from India: pregnancy, childbirth, and newborn care. *Journal of obstetric, gynecologic, and neonatal nursing : JOGNN*, *26*(5), 533–539. https://doi.org/10.1111/j.1552-6909.1997.tb02156.x
- Misra, G., Cornelissen, R. M. M., & Varma, S. (2010). *Foundations of Indian psychology: Concepts and theories* (Vol. 1). Pearson India.
- Misra, G., Cornelissen, R. M. M., & Varma, S. (2011). *Foundations of Indian psychology: Practical applications* (Vol. 2). Pearson Education India.

UNIT II: Childhood, Socialization and Samskar

- Chaube, S. P. (2002). *Psychology of adolescents in India*. Concept Publishing Company.
- Gupta, D. (2009). The cultural context of child development: A study of preschool children in an urban setting in India. *Childhood Education, 85*(6), 354–359.
- Sondhi, R. (2017). *Parenting adolescents in India: A cultural perspective* (pp. 91–108). https://www.researchgate.net/publication/317322156_Parenting_Adolescents_in_India_A_Cultural_Perspective

UNIT III: Indigenous Philosophy and Traditions

- Mahadevan, B., Bhat, V. R., & Nagendra Pavana, R. N. (2022). *Introduction to Indian knowledge system: Concepts and applications*. Atlantic Publishers and Distributors Pvt. Ltd.
- Ramanujan, A. K. (1991). *Folktales from India*. Pantheon Books.
- Rao, K. R., Paranjpe, A. C., & Dalal, A. K. (Eds.). (2008). *Handbook of Indian psychology*. Cambridge University Press India.

UNIT IV: Contemporary Child Development and Indian Knowledge Systems

- Chaudhary, N. (2004). *Listening to culture: Constructing reality from everyday talk*. SAGE Publications.
- Chaudhary, N. (2013). Dynamics of parental socialization in India. In H. Selin (Ed.), *Parenting across cultures: Child rearing, motherhood and fatherhood in non-Western cultures* (pp. 11–24). Springer.
- Desai, S., Dubey, A., Joshi, B. L., Sen, M., Shariff, A., & Vanneman, R. (2010). *Human development in India: Challenges for a society in transition*. Oxford University Press.

- Rao, K. R. (2011). *Applied yoga psychology: Studies of neurophysiology of meditation*. Springer India.

Suggested Readings

- Bowen, Z., & Hinchy, J. (2015). Introduction: Children and knowledge in India. *South Asian History and Culture, 6*(3), 317–329. https://doi.org/10.1080/19472498.2015.1030875
- Laible, D. J., Carlo, G., & Raffaelli, M. (2000). The differential relations of parent and peer attachment to adolescent adjustment. *Journal of Youth and Adolescence, 29*(1), 45–59. https://link.springer.com/article/10.1023/A:1005169004882
- Ariès, P. (1962). *Centuries of childhood: A social history of family life* (R. Baldick, Trans.). Vintage Books.
- Kumar, K. (1992). *What is worth teaching?* Orient BlackSwan.

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

DISCIPLINE SPECIFIC CORE COURSE

LANGUAGE AND COGNITION IN DEVELOPMENT STUDIES

CREDIT DISTRIBUTION, ELIGIBLITY AND PRE REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Language and Cognition in Development Studies	**4**	**3**	**1**	**0**	**As per admission norms**	**Nil**

Learning Objectives

- To develop a foundational understanding of language as a cognitive system, including its structure, components, and theoretical frameworks.
- To explore key cognitive processes involved in language perception, acquisition, processing, and use across developmental stages.
- To analyse the interconnections between language, communication, thought, culture, and higher-order cognitive functions.
- To examine contemporary research, cross-cultural perspectives, and practical applications related to language, cognition, and communication.

Learning Outcomes

Students will be able to:

- Demonstrate comprehensive knowledge of linguistic components, cognitive theories, and major debates in language and cognition.
- Explain and analyse cognitive processes underlying language processing, acquisition, memory, attention, and bilingualism.
- Critically evaluate the role of language in reasoning, problem-solving, social cognition, and emotional expression.
- Apply theoretical understanding to interpret language disorders, cross-cultural variations, and contemporary issues in cognition, including AI and language models.

THEORY

(Credits 3; Hours 45)

UNIT I: Foundations of Language and Cognitive Science 12 Hours

This unit introduces the foundational ideas of language and cognitive science, focusing on how humans acquire, process, and use language to make meaning. It also examines the mental processes involved in thinking, perception, memory, and problem-solving, highlighting their role in learning and development.

- Nature and definition of language; human vs. animal communication
- Components of language: phonology, morphology, syntax, semantics, pragmatics
- Cognitive science: origins, core assumptions, and interdisciplinary contributions
- Cognition and mother tongue: Relationship between language, thought, and culture
- Major debates:
  - Linguistic determinism vs. linguistic relativity (Sapir–Whorf)
  - Modularity of mind (Chomsky, Fodor)
  - Universal Grammar and innate mechanisms

UNIT II: Cognitive Processes Underlying Language 12 Hours

This unit focuses on the cognitive mechanisms that support language, including brain processing, memory, attention, developmental milestones, and the impact of multilingualism on concept formation and language control.

- Language processing in the brain: key regions and pathways
- Perception and comprehension of speech
- Language acquisition and developmental milestones
- Memory and language: working memory, semantic memory, episodic memory
- Attention, executive functions, and language control
- Bilingualism and multilingualism: cognitive advantages, code-switching, cognitive load
- Concept formation, categorization, and the role of linguistic labels

UNIT III: Language, Communication, and Higher-Order Cognition 12 Hours

This unit focuses on role of language in higher-order cognitive functions such as communication, reasoning, social understanding, and emotional expression, emphasizing how linguistic processes shape thought and interaction.

- Pragmatics: inference, implicature, context, and meaning-making
- Symbolic representation and mental imagery
- Language in problem-solving, reasoning, and decision-making
- Narrative thought, storytelling, and cognitive organization
- Social cognition and language:
  - Theory of Mind and communicative intent
  - Joint attention, gesture, and multimodal communication
- Language, emotion, and cognition: appraisal, expression, and metaphor

UNIT IV: Contemporary Issues, Research, and Applications **9 Hours**

This unit focuses on contemporary challenges and research in language and cognition, focusing on disorders, environmental impacts, emerging AI influences, and cross-cultural perspectives to inform practical applications.

- Language disorders: aphasia, dyslexia, developmental language disorder
- Cognitive impacts of deprivation, trauma, and delayed language exposure
- AI, language models, and human cognition
- Cross-cultural perspectives on communication and cognition

TUTORIALS

(Credits 1; Hours 15)

- Discussions and readings on language and popular culture
- To document experiences of growing up in bilingual/multilingual homes.
- To analyse selected regional stories/literature that showcase Indian culture.
- To critically evaluate the linkages between cognition and language using everyday conversations of children.
- To collect lullabies, folklore and folk stories for representations of childhood cognition and language.

Essential Readings

UNIT I: Foundations of Language and Cognitive Science

- Dhamija, R. (2011). *Cognitive psychology*. Sage.
- Eysenck, M. W., & Brysbaert, M. (2021). *Cognitive psychology: A student's handbook* (8th ed.). Routledge.
- Fromkin, V., Rodman, R., & Hyams, N. (2017). *An introduction to language* (11th ed.). Cengage Learning.

UNIT II: Cognitive Processes Underlying Language

- Sinha, C. (2015). *Language and cognition*. Routledge.
- Bhatia, T. K., & Ritchie, W. C. (Eds.). (2004). *The handbook of bilingualism*. Blackwell.
- Agnihotri, R. K. (2007). *Towards a linguistic theory of second language*. Orient Blackswan.

UNIT III: Language, Communication, and Higher-Order Cognition

- Ajay Kumar, & Archana. (2020). *Applied cognitive psychology*. Sage.
- Chomsky, N. (2016). *Language and mind* (3rd ed.). Cambridge University Press.
- Kathpalia, S. S. (2011). *Metaphor and communication in Indian contexts*. Springer.

UNIT IV: Contemporary Issues, Research, and Applications

- Bhat, D. N. S. (2000). *The structure of Indian languages*. Motilal Banarsidass.
- Dalal, A. K., & Misra, G. (Eds.). (2010). *The core and context of Indian psychology*. Pearson.
- Poibeau, T., & Villavicencio, A. (Eds.). (2018). *Language, cognition, and computational models*. Cambridge University Press.
- Paul, R., & Norbury, C. F. (2019). *Language disorders from infancy through adolescence* (5th ed.). Elsevier.
- Siegel, D. J. (2012). *The developing mind: How relationships and the brain interact to shape who we are* (2nd ed.). Guilford Press.
- Taqa, A. R. (2025). *Multilingual education and its impact on cognitive development*. Enhanced Research Publications. https://www.researchgate.net/publication/388869478_Multilingual_Education_and_Its. Impact on Cognitive Development.
- Van der Kolk, B. A. (2015). *The body keeps the score: Brain, mind, and body in the healing of trauma*. Viking.

Suggested Readings

- Karanth, P., & Rozario, J. (2011). *Learning disabilities in India: From clinic to classroom*. Sage.
- Kroll, J. F., & De Groot, A. M. B. (Eds.). (2005). *Handbook of bilingualism: Psycholinguistic approaches*. Oxford University Press.
- Gupta, A. F. (Ed.). (2006). *Bilingualism in India*. Orient Blackswan.
- Misra, G. (Ed.). (2010). *Psychology in India: Volume 4 – Theoretical and methodological developments*. Pearson.
- Mohanty, A. K. (2019). The multilingual reality: Living with languages. Multilingual Matters.
- Narasimhan, R. (1998). *Language and cognition*. Sage.
- Rao, N., & Pearson, E. (Eds.). (2010). *Asia-Pacific perspectives on early childhood education*. Routledge.
- Singh, R. (Ed.). (1995). *The yearbook of South Asian languages*. Sage.
- Vygotsky, L. S. (1986). *Thought and language*. MIT Press. (Original work published 1934)
- Zheng, Z., Degotardi, S., Djonov, E. (2021). Supporting multilingual development in early childhood education: A scoping review, International Journal of Educational Research. *110*, 101894. ISSN 0883-0355. https://doi.org/10.1016/j.ijer.2021.101894.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
ORGANIZATION AND MANAGEMENT OF PROGRAMMES FOR ADULTS

CREDIT DISTRIBUTION, ELIGIBLITY AND PRE REQUISITES OF THE COURSE

Course title and code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical		
Organization and Management of Programmes for Adults	**4**	**2**	**0**	**2**	**As per admission norms**	**-**

Learning Objectives:

- To develop an in-depth understanding of professional contexts, ethical practices and intervention strategies for working with adults, families and communities.
- To build skills in programme design, planning and needs assessment across diverse settings.
- To enhance the ability to create sustainable, culturally responsive and context-specific programmes.
- To strengthen practical competence for implementing and evaluating interventions within varied socio-cultural and institutional environments.

Learning Outcomes:

Students will be able to-

- Demonstrate a clear understanding of professional contexts, ethical standards and intervention approaches for adults, families and communities.
- Apply skills in programme design, planning and needs assessment to real-world scenarios.
- Design sustainable, culturally responsive and context-appropriate programmes for diverse settings.
- Implement and evaluate intervention programmes within varied socio-cultural and institutional environments

THEORY

(Credits 2; Hours 30)

UNIT I: Contexts of Work and Ethical Practice **7 Hours**

This unit focuses the diverse contexts in which work takes place, including formal, informal, and emerging professional settings. It also highlights the importance of ethical practice.

- Study of professional work environments, including homes, workplaces, communities, and care/protection institutions.
- Study of professional ethics, standards, and codes of conduct relevant to community and adult-focused interventions.

UNIT II: Programme Design and Planning **8 Hours**

This unit focuses on designing and planning programmes for adults and families by analysing their objectives, frameworks, and methodologies while ensuring sustainability through rights- based and strategic implementation.

- Analysis of the nature, objectives, and methodological approaches of programmes for adults and families
- Overview of institutional frameworks, guiding philosophies, services, and interventions
- Strategies for ensuring sustainability and long-term impact of programmes
- Rights-based planning: allocation of resources, defining activities, clarifying roles and responsibilities, effective communication, and establishing timelines

UNIT III: Needs Assessment and Community Analysis **7 Hours**

This unit focuses on the importance of assessing community needs and resources through situational analysis and baseline surveys to effectively inform programme design and implementation.

- Situational analyses and baseline surveys to identify community and individual needs.
- Mapping and evaluation of resources available within the community.
- Application of needs assessment findings to inform and guide programme design.

UNIT IV: Implementation, Monitoring, and Documentation **8 Hours**

This unit focuses on effective implementation, monitoring, and documentation of interventions by integrating multi-level strategies and services while adapting programmes to diverse contexts and ideologies.

- Development and execution of strategies for interventions at individual, group, and community levels
- Integration of governmental, non-governmental, institutional, and community-based services
- Systematic approaches to monitoring, evaluation, budgeting and documentation of programme outcomes
- Adaptation of interventions to align with diverse ideological perspectives and practical contexts

PRACTICAL

(Credits 2; Hours 60)

- To undertake visits to selected institutions working with adults and systematically document development-oriented programmes and interventions.
- To design and conduct a needs assessment survey in selected localities and communities in order to profile the everyday lives, challenges, and support systems of adults.
- To carry out a community baseline survey to generate data for the planning and design of policies, programmes, and interventions for adult populations.
- To develop and utilize checklists to assess institutional standards, service quality, and infrastructural and programmatic requirements of adult-focused institutions.
- To complete an internship in adult institutions with a focus on programme planning, implementation, and evaluation of intervention strategies.
- To prepare an in-depth case study of an adult, identifying needs, strengths, and activities across physical, cognitive, emotional, social, and vocational domains of adult development.

Essential Readings

UNIT I: Contexts of Work and Ethical Practice

- Merriam, S. B., & Baumgartner, L. M. (2020). *Learning in adulthood: A comprehensive guide* (4th ed.). Jossey-Bass.
- Bryson, J. M. (2018). *Strategic planning for public and nonprofit organizations* (5th ed.). Wiley.
- Ledwith, M. (2016). *Community development: A critical approach* (2nd ed.). Policy Press.
- Freire, P. (2000). *Pedagogy of the oppressed* (30th anniversary ed.). Bloomsbury Academic.

UNIT II: Program Design and Planning

- Armstrong, K. H., et al. (2014). *Evidence-based interventions for adult and family services*. Springer.
- Sriram, R. (2014). *Engaging in social intervention (for mentors)* (Vol. II). Concept Publishing Company.
- Bamberger, M., Rao, V., & Woolcock, M. (2010). *RealWorld evaluation: Working under budget, time, data, and political constraints* (2nd ed.). SAGE Publications.
- Kettner, P. M., Moroney, R. M., & Martin, L. L. (2017). *Designing and managing human service programs* (5th ed.). Pearson**.**

UNIT III: Needs Assessment and Community Analysis

- Brookfield, S. D. (2013). *Powerful techniques for teaching adults*. Jossey-Bass.
- Erikson, E. H. (1997). *The life cycle completed* (Extended version). W. W. Norton & Company.
- United Nations Development Programme. (2025). *Human rights-based approach to development programming: HRBA toolkit*. UNDP. https://www.undp.org/publications/human-rights-based-approach-development-

programming-hrba-toolkit
- Udayan Care. (n.d.). *Standards of care*. https://www.udayancare.org/sites/default/files/Standards_of_Care.pdf

UNIT IV: Implementation, Monitoring, and Documentation

- Kusek, J. Z., & Rist, R. C. (2004). *Ten steps to a results-based monitoring and evaluation system: A handbook for development practitioners*. World Bank.
- BetterEvaluation. (n.d.). *BetterEvaluation toolkit: Evaluation tools and resources*. https://www.betterevaluation.org/tools-resources
- United Nations Development Programme. (n.d.). *Handbook on planning, monitoring, and evaluating for development results*. UNDP. https://www.undp.org/turkiye/publications/undp-handbook-planning-monitoring-and-evaluating-development-results

Suggested Readings

- UNESCO. (2016). *Global report on adult learning and education (GRALE)*. UNESCO Institute for Lifelong Learning. https://unesdoc.unesco.org/ark:/48223/pf0000372274
- Hart, R.A. (1997).Children's Participation: The Theory and Practice of Involving Young Children in Community Development and Environmental Care. Routledge.
- Rivera, W. M. (Ed.). (2019). *Planning adult learning: Issues, practices, and directions*. Routledge.
- Jarvis, P. (2004). *Adult education and lifelong learning: Theory and practice* (2nd ed.). RoutledgeFalmer.
- Mezirow, J. (2000). *Learning as transformation: Critical perspectives on a theory in progress*. Jossey-Bass.
- Knowles, M. S., Holton, E. F., & Swanson, R. A. (2015). *The adult learner* (8th ed.). Routledge.
- Ungar, M. (2012). *The social ecology of resilience: A handbook of theory and practice*. Springer

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

SOCIOLOGY OF FAMILY AND COMMUNITY CARE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Sociology of Family and Community Care	4	2	0	2	As per admission norms	Nil

Learning Objectives

- To enable students to critically understand the social, cultural, ethical and economic dimensions of care in family and community.
- To explain how care operates within family, community, and wider social structures.
- Examine caregiving as a relational and socially shaped practice.
- Analyze how urbanization, mobility, and changing family structures shapes informal support networks.

Learning Outcomes

The students would be able to:

- Understand the sociological concept of care and its multiple dimensions in family, community and society.
- Analyze care as a practice and experience within social relationships.
- Assess care as a socio-economic contribution and its role in sustaining social and economic systems.
- Examine the contemporary challenges, urbanization and community support.

THEORY

(Credits 2; Hours 30)

UNIT I: Conceptualizing Care and its Multiple Dimensions 6 Hours

This unit focuses on the concept of care, its historical evolution, multiple dimensions, and the impact of changing family patterns on caregiving practices.

- Sociological definitions and concept of care
- Historical evolution of care: From kinship-based care to institutional and state care

- Care as practice, relationship, value, and emotional labour in family and community
- Changing family patterns and their impact on caregiving

UNIT II: Dimensions of Care in Social Sphere 8 Hours

This unit focuses on care in the social sphere, exploring its moral, cultural, and gendered dimensions, societal expectations, and the role of technology in contemporary caregiving.

- Sociology perspective of care, support and welfare
- Care as a moral, social and cultural obligation, gendered
- Care and social stratification, care in crises, in institutional care
- Cultural meanings of dependency and autonomy related to care
- Digital and technological mediation of care
- Expectations of modern society in caregiving practices

UNIT III: Ethics of Care 6 Hours

This unit focuses on the ethics of care, addressing theoretical frameworks, socio-economic valuation, global care issues, and ethical dilemmas in caregiving practices.

- Philosophical and theoretical frameworks
- Care as socio-economic contribution (Valuation of paid and unpaid caregiving)
- Transnational ethics: Global care chains, ethical issues in migration of care labour
- Ethical dilemmas in caregiving: Consent, privacy, boundaries, burnout and structural inequalities

UNIT IV: Challenges of Care in Contemporary Society 10 Hours

This unit focuses on contemporary challenges in care, highlighting demographic pressures, inequalities, care labour issues, and ethical implications of policy and technological changes.

- Demographic and infrastructural challenges including eldercare, childcare, disability and mental health services, long-term care need
- Intersectionality and Inequalities in access to care and community-based support systems.
- Care labour precarity and safety concerns alongside cases of neglect, violence, and abuse in care institutions
- Policy and technological transitions: maternity and disability rights, and elder care confronting new ethical challenges posed by automation, AI-driven care tools, and robotic caregivers.

PRACTICAL

(Credits 2; Hours 60)

- To conduct a phenomenological study to draw personal experience of care or observations from your own home
- To conduct 'care' mapping within a household or community. Identify care practices such as childcare, elderly care, caregiver interactions, and related activities
- Conduct interviews to examine the role of family size, migration, SES, gender and cultural influences on caregiving arrangements
- To conduct a survey to critically analyse determinants of inequality in caregiving practices. The survey should reflect on influence of culture, SES, gender norms, paid and unpaid caregiving labor and socio-economic value of care
- Field visits to care institutions catering to different stages of the lifespan and life circumstances. Conduct systematic observation of infrastructure, services, daily routine, interactions
- To conduct brief research on experiences in long term caregiving
- To prepare a report looking at the Indian cultural care practices in familial contexts
- Use secondary data to investigate role of families, communities and institutions during crisis in providing childcare and eldercare
- To critically analyse the functioning of assistive technologies and AI tools usage in care practices. Comment on their accessibility, efficacy, ethical risks and concerns

Essential Readings

UNIT I: Conceptualizing Care and its Multiple Dimensions

- Aulenbacher, B., Lutz, H., & Riegraf, B. (2018). Introduction: Towards a global sociology of care and care work. *Current Sociology, 66*(4), 495–502.
- England, P. (2005). Emerging theories of care work. *Annual Review of Sociology, 31*, 381–399.
- Mobile Creches. (2020*).* State of the young child in India *(1st ed.).* Routledge India. https://bonniesglobalcafe.worldforumfoundation.org/wp-content/uploads/2020/10/7037f4f7-mc-state-of-the-young-child-in-india-report.pdf
- Penderi, E., Koulouglioti, C., & Pafiti, I. (2023*).* A multidimensional–multilevel approach to literacy-related parental involvement and its effects on preschool children's literacy competences: A sociopedagogical perspective. Education Sciences, 13(12), Article 1192. https://doi.org/10.3390/educsci13121192

UNIT II: Dimensions of Care in Social Sphere

- Tronto, J. C. (2013). *Caring democracy: Markets, equality, and justice*. New York University Press.
- Daly, M. (2002). Care as a good for social policy. *Journal of Social Policy, 31*(2), 251–270.
- Rai, S. M. (2024). *Depletion: The human costs of caring.* Oxford University Press.
- Folbre, N., & Bittman, M. (Eds.). (2004). *Family time: The social organization of care (Vol. 2)*. Psychology Press.

UNIT III: Ethics of Care

- Müller, B. (2019). The careless society: Dependency and care work in capitalist societies. *Frontiers in Sociology*, 1–10.
- Held, V. (2006). *The ethics of care: Personal, political, and global*. Oxford University Press.
- Noddings, N. (1984). *Caring: A feminine approach to ethics and moral education*. University of California Press.
- Sevenhuijsen, S. (2020). *Citizenship and the ethics of care: Feminist considerations on justice, morality and politics*. Routledge.
- Pease, B., Vreugdenhil, A., & Stanford, S. (Eds.). (2020). *Critical ethics of care in social work: Transforming the politics and practices of caring*. Routledge.

UNIT IV: Challenges of Care in Contemporary Society

- Folbre, N. (2006). Measuring care: Gender, empowerment, and the care economy. *Journal of Human Development, 7*(2), 183–199.
- Luttrell, W. (2020). *Children framing childhoods: Working-class kids' visions of care*. Policy Press.
- Lynch, K. (2007). Love labour as a distinct and non-commodifiable form of care labour. *The Sociological Review, 55*(3), 550–570.
- Nandi, S., & Samantroy, E. (Eds.). (2022). *Gender, unpaid work and care in India*. Routledge.
- Piepzna-Samarasinha, L. L. (2018). *Care work: Dreaming disability justice*. Arsenal Pulp Press.

Suggested Readings

- Daly, M. (Ed.). (2001). *Care work: The quest for security*. International Labour Organization.
- Duffy, M., Armenia, A., & Stacey, C. L. (2015). *Caring on the clock: The complexities and contradictions of paid care work*. Rutgers University Press.
- Fine, M. (2005). Individualization, risk and the body: Sociology and care. *Journal of Sociology, 41*(3), 247–266.
- Glenn, E. N. (2010). *Forced to care: Coercion and caregiving in America*. Harvard University Press.
- Ilcan, S. (2009). Privatizing responsibility: Public sector reform under neoliberal government. *Canadian Review of Sociology, 46*(3), 207–234.
- Lam, W. W. Y., Nielsen, K., & Kelly, C. M. (2023). The experience of working informal carers of older people: A qualitative diary study. *International Journal of Care and Caring*, 1–16.
- Weicht, B. (2008). The morality of caring: The discursive construction of informal care. *Enquire, 1*(2), 120–143.
- Braga, J. (Ed.). (2024). *Ethics of care: Theoretical and practical perspectives*. Springer.
- Robinson, F. (2021). *The ethics of care: A feminist approach to human security*. Oxford University Press.
- Sahraoui, N. (2020). *Racialised workers and European older-age care: From care labour to care ethics*. Palgrave Macmillan.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
CHILDHOOD AND ADOLESCENCE ACROSS ECOLOGICAL SETTINGS

CREDIT DISTRIBUTION, ELIGIBLITY AND PRE REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Prerequisite of the Course (if any)
		Lecture	Tutorial	Practical		
Childhood and Adolescence Across Ecological Settings	**4**	**2**	**0**	**2**	**As per admission norms**	**Nil**

Learning Objectives

- Identify major theoretical perspectives and examine the specific features of childhood and adolescence as distinct stages of development.
- To explain key social processes in childhood and adolescence
- To understand childhood and adolescent experiences across cultures.
- To analyse diverse child-rearing practices and socialisation patterns, and evaluate how cultural values influence developmental outcomes.

Learning Outcomes

The students would be able to:

- Develop a comprehensive understanding of the social processes that occur during childhood and adolescence.
- Articulate the diverse experiences of childhood and adolescence across different parts of the world.
- Gain an understanding of how child-rearing practices and socialization vary across cultures.
- Understand how policy frameworks shape programmes for children and adolescents.

THEORY

(Credits 2; Hours 30)

UNIT I: Introduction to childhood and adolescence in different settings 8 Hours

This unit introduces childhood and adolescence as developmental stages experienced across diverse social, cultural, familial, and institutional settings.

- Theoretical perspectives on childhood and adolescences in different context
- Developmental stages in childhood in different ecological settings
- Adolescence and its social significance in different cultures
- Adolescence to youth: A phase of identity formation and social renewal
- Cultural shaping of human development across childhood and adolescence

UNIT II: Child rearing and socialization 8 Hours

This unit focuses on child-rearing and socialization across cultures, examining rituals, developmental practices, and the dynamic interactions between children and their societies.

- Cross-cultural studies of child-rearing
- Birth and early childhood rituals in different cultures
- Socialization and child development in diverse culture
- Reciprocal individual-society interactions

UNIT III: Childhood and adolescence in different cultures 6 Hours

This unit focuses on childhood and adolescence across cultures, highlighting diverse caregiving practices, socialization, and insights from ethnographic studies.

- Child care and socialization in different cultures
- Ethnographic study of childhood and adolescence across cultures

UNIT IV: Childhood and adolescence in Indian communities 8 Hours

This unit focuses on childhood and adolescence in Indian communities, considering historical, cultural, and contemporary perspectives to inform policies and planning for socially disadvantaged children.

- Historical & cultural perspectives and ideological beliefs
- Contemporary status and Wellbeing of Children and Adolescents
- Implications for policy and planning for children with social disadvantage

PRACTICAL

(Credit 2; Hours 60)

- Using mixed and appropriate methods for studying childhood in Indian society.

- Document concepts of childhood across cultures and contexts from primary and secondary sources and relevant findings through analysis of departmental dissertations.

- Carry out a case profile/survey on the following:

    1. Child-rearing practices in different regions of Indian society
    2. Adolescence as a distinct stage with supportive examples
    3. Contemporary societal perspective on childhood and adolescence

- Design a social experiment on emphasizing contemporary conditions, problems and their relevance in human development (using primary and secondary sources of data)

    or

    On changing Indian family with an analysis of the past, present and future, focusing on the diversity of India.

Essential Readings

UNIT I: Introduction to childhood and adolescence in different settings

- Ranganathan, N. (Ed.). (2020). *Understanding childhood and adolescence*. Sage Publications India.
- Arnett, J. (2011). *Human development: A cultural approach*. Pearson.
- Kail. R.V. (2021). Children and their development (7th ed). Pearson.

UNIT II: Child rearing and socialization

- Saraswathi, T. S. (Ed.). (1999). *Culture, socialization and human development: Theory, research and applications in India*. SAGE Publications India.
- Kagitcibasi, Ç. (2007). *Family, self, and human development across cultures: Theory and applications* (2nd ed.). Lawrence Erlbaum Associates

UNIT III: Childhood and adolescence in different cultures

- Harkness, S., & Super, C. (1996). *Parents' cultural belief systems: Their origins, expressions and consequences.* The Guilford Press.
- Le Vine, R. A. (2007). Child rearing as cultural adaptation. In R. A. LeVine & R. S. New (Eds.), *Anthropology and child development: A cross-cultural reader* (pp. 91–101). Blackwell.
- Lansford, J. E., et al. (2021). Cross-cultural similarities and differences in parenting. *Annual Review of Psychology*, *72*, 449–476.

UNIT IV: Childhood and adolescence in Indian communities

- Saraswathi, T. S. (Ed.). (2003). *Indian adolescence in a globalizing world*. Rawat Publications.

- Khalakdina, M. (2008). Human development in the Indian context: A socio-cultural focus. Sage.
- Lancy, D. F. (2022). *The anthropology of childhood* (3rd ed.). Cambridge University Press.
- Patra, S. (Ed.). (2022). *Adolescence in India: Issues, challenges and possibilities*. Springer. https://doi.org/10.1007/978-981-16-9881-1
- Saraswathi, T.S., Oke, M. (2013). Ecology of Adolescence in India: Implications for Policy and Practice. *Psychol Stud 58*, 353–364. http://dx.doi.org/10.1007/s12646-013-0225-7

Suggested Readings

- Chaudhary, N. (2009). Families and Children in Poverty: Objective Definitions, Subjective Lives. In A. C. Bastos & E. P. Rabinovich (Ed.) *Living in Poverty: Developmental Poetics of Cultural Lives*. Information Age.
- Matsumoto, D. (Ed.). (2001). *The Handbook of Culture and Psychology*. Oxford University Press.
- Dar, A., & Kannan, D. (Eds.). (2023). *Childhood and youth in India: Engagements with modernity*. Palgrave Macmillan.
- Kapadia, S. (2017). *Adolescence in urban India: Cultural construction in a society in transition*. Springer India.
- Trawick, M. (2003). The Person Behind the Family. In V. Das (Ed.), *The Oxford companion to sociology and social anthropology* (Vol. 2, pp. 1158-1178). Oxford University Press.

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

Annexure-4

UNIVERSITY OF DELHI

Department of Home Science

Faculty of Science

1-Year M.Sc.

Development Communication & Extension

Research Track

Department of Home Science

University of Delhi

Course Credit Structure- NEP 2025

The Department of Home Science offers a one-year Master's Programme in Development Communication & Extension designed to equip students with a deep understanding of communication strategies, participatory approaches, and community development practices. The programme bridges theory and practice, emphasizing communication for social change, media literacy, research, and extension management. Students gain the knowledge and skills needed to design, implement, and evaluate communication interventions that empower communities and foster sustainable development. The curriculum integrates academic rigor, field engagement, and technological innovation, ensuring students are prepared for leadership roles in development organizations, media institutions, academia, and research agencies.

Programme Specific Objectives:

- To build a strong foundation in development theories, participatory communication, and extension education for sustainable social transformation.
- To equip students with advanced research and analytical skills for investigating development issues and evaluating communication strategies.
- To strengthen students' ability to design and implement evidence-based communication programmes addressing real-world social challenges.
- To cultivate ethical, inclusive, and gender-sensitive perspectives in all aspects of development and communication practice.
- To foster appreciation for community knowledge systems and participatory methods that empower marginalized groups.
- To prepare graduates for professional roles in development agencies, NGOs, media organizations, research institutes, and academic institutions.
- To promote engagement with emerging communication technologies for effective dissemination, advocacy, and behavioral change.

Programme Specific Outcomes:

The post graduate program in the Department of Development Communication & Extension, strives to educate and train students to enable them to:

- Apply development and communication theories to design context-specific, community-driven interventions.
- Demonstrate proficiency in media production, research methodologies, and participatory communication techniques.
- Critically evaluate and apply ICTs and digital tools for social and behavioral change communication.
- Integrate ethical and gender-sensitive principles into communication and extension practices.
- Work collaboratively with diverse stakeholders to implement and manage community-based programmes.
- Exhibit leadership in development communication, policy advocacy, and capacity-building initiatives.
- Conduct innovative research contributing to sustainable development, public awareness, and inclusive growth.

DEPARTMENT OF DEVELOPMENT COMMUNICATION AND EXTENSION

1-Year MSc Curriculum under NEP

Research Track

List of Courses to be offered to students opting for Structure-3 of M.Sc. in 1st and 2nd Semester of one year course							
Type of Course	**Type**	**Semester**	**Name of Courses**	**Credit in each course**			
				Lecture	**Tutorial**	**Practical**	**Total**
SEMESTER – I							
Discipline Specific Core Course	**DSC1**	**I**	**Research and Innovations for Social & Behavioral Change**	**3**	**1**	**0**	**4**
Discipline Specific Core Course	**DSC2**	**I**	**ICTs & Digital Technology for Development**	**2**	**0**	**2**	**4**
Discipline Specific Elective Course	**DSE1**	**I**	**From the Pool of DSEs given below:**				
			• Monitoring & Evaluation for Accountability & Learning	**3**	**0**	**1**	**4**
			• Statistics and Data Management	3	**0**	**1**	**4**
			• Consumption Behaviour and Sustainable Development	3	**1**	**0**	**4**
			• **Food Systems & Nutrition Security**	3	**0**	**1**	**4**
			• **Human Centred Design & Innovation**	3	**0**	**1**	**4**
			• **Social Entrepreneurship**	3	**1**	**0**	**4**
			• **Poverty , Livelihood Systems & Skilling**	3	**1**	**0**	**4**
			• **Civil Society and Volunteer Management**	3	**1**	**0**	**4**

			• **Community Organisation, Social Policy and Development**	3	**1**	**0**	**4**
Advanced Research Methodology of the core discipline	**ARM**	**I**	**Advanced Research Methodology**	**2**	**0**	**0**	**2**
Tools for Research	**TR-1**	**I**	**Tools for Research**	**2**	**0**	**0**	**2**
Project work	**IP-1**	**I**	**Research Project**	**0**	**0**	**10**	**10**
SEMESTER II							
Discipline Specific Elective Course	**DSE1**	**II**	**From the Pool of DSEs given below:**				
			• Rural Marketing and Development	**3**	**1**	**0**	**4**
			• Public Administration and Governance	**3**	**1**	**0**	**4**
			• Gender, Diversity and Inclusion	**3**	**1**	**0**	**4**
			• SBC: Theory & Practice	**2**	**0**	**2**	**4**
			• Project Management & Grant Writing	**3**	**0**	**1**	**4**
			• Peace, Human Rights and Humanitarian Action	**3**	**1**	**0**	**4**
			• Training & Capacity Building	**2**	**0**	**2**	**4**
			• ESG, Sustainability Reporting and Social Impact	**3**	**0**	**1**	**4**
			• Lifelong Learning and Life Skills	**3**	**1**	**0**	**4**

Techniques of research writing	**TRW**	**II**	**Techniques of research writing**	**2**	**0**	**0**	**2**
Project work	**IP2**	**II**	**Research Project**	**0**	**0**	**16**	**16**
Pool of Discipline Specific Elective Courses to be offered in the 1st semester	**Monitoring & Evaluation for Accountability & Learning**						
	Statistics and Data Management						
	Consumption Behaviour and Sustainable Development						
	Food Systems & Nutrition Security						
	Human Centred Design & Innovation						
	Social Entrepreneurship						
	Poverty, livelihood systems & Skilling						
	Civil Society and Volunteer Management						
	Community Organisation, Social Policy & Development						
Pool of Discipline Specific Elective Courses to be offered in the 2nd Semester	**Rural Marketing and Development**						
	Public Administration and Governance						
	Gender, Diversity and Inclusion						
	Project Management & Grant Writing						
	SBC: Theory & Practice						
	Training & Capacity Building						
	Peace, Human Rights and Humanitarian Action						
	ESG, Sustainability Reporting and Social Impact						
	Lifelong Learning and Life Skills						

DSC				DSE				SBC				Dissertation/Academic Project/Entrepreneurship
Paper Title (4 Credits each)	Credit Distribution			Paper Title (4 Credits each)	Credit Distribut Ion			Paper Title (2 Credits each)	Credit Distribution			
	Th	Tu	Pr		Th	Tu	Pr		Th	Tu	Pr	
SEMESTER I												
Pick any 1				Pick Any 1				Research Methods/Tools/Writing Pick all				One intensive problem based research
Research and Innovations for Social & Behavioral Change	3	1	0	Statistics & Data Management	3	0	1	Advanced Research Methodology	2	0	0	10 credits
				Monitoring & Evaluation for Accountability & Learning	3	0	1					
					3	1	0					
				Consumer Behaviour and Sustainable Development	3	0	1					
				Food Systems & Nutrition Security	3	0	1					
				Human Centred Design & Innovation	3	1	0					
				Social Entrepreneurship	3	1	0					
				Poverty, livelihood systems & Skilling	3	1	0					
				Civil Society and Volunteer Management	3	1	0					

				Community Organisation, Social Policy & Development								
ICTs & Digital Technology for Development	2	0	2									
								Tools for research	2	0	0	

SEMESTER II											
				Pick Any 1				Pick all			
NIL				Rural Marketing and Development	3	1	0	Techniques of research writing	2	0	0	16 credits
				Public Administration and Governance	3	1	0					
				Gender, Diversity and Inclusion	3	1	0					
				SBC: Theory & Practice	3	1	0					
				Project Management & Grant Writing	2	0	2					
				Peace, Human Rights and Humanitarian Action	3	0	1					
				Training & Capacity Building	3	1	0					
				ESG, Sustainability Reporting and Social Impact	2	0	2					
				Lifelong Learning and Life Skills	3	0	1					

					3	1	0					
NIL												

DISCIPLINE SPECIFIC CORE

RESEARCH AND INNOVATIONS FOR SOCIAL & BEHAVIORAL CHANGE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Research and Innovations for Social & Behavioral Change	**4**	**3**	**1**	**0**	**As per admission requirements**	**Should be aware of basics of Research Methodology and Communication Concepts**

Learning Objectives

1. To develop advanced understanding of research innovations and emerging methodologies in Social and Behavioural Change
2. To explore the role of Artificial Intelligence (AI) and digital technologies in research and communication
3. To understand the integration of research evidence into communication strategies for development practice
4. To build competencies in designing AI-enabled research and communication interventions

Learning Outcomes

The students will be able to:

1. Demonstrate knowledge of advanced and innovative research approaches
2. Apply Social and Behavioural Change strategies in development, extension, and social work contexts
3. Utilize AI tools for data collection, analysis, and communication design
4. Design evidence-based communication interventions for behavioral change
5. Critically evaluate ethical issues in AI-driven research and communication

THEORY

(Credits 3; Hours 45)

UNIT I: Research Innovations in Social and Behavioural Change (12 Hours)

This unit introduces emerging trends and innovations in research, focusing on participatory, digital, and interdisciplinary approaches in SBC and development practice.

- Evolution of research paradigms: from traditional to innovative approaches
- Mixed methods, participatory research, and action research
- Digital research methods: online surveys, mobile-based data collection
- Role of AI in research: data mining, predictive analytics, automated coding
- Use of AI tools in literature review and academic writing
- Ethical considerations in innovative and AI-based research

UNIT II: AI and Digital Tools in Research and Data Analysis (11 Hours)

This unit focuses on practical and technological advancements in research with emphasis on AI-enabled tools and platforms.

- AI-based research tools: data analysis, transcription, and visualization
- Use of AI in qualitative and quantitative data analysis
- Research automation: survey design, chatbot-based data collection
- Data visualization tools: dashboards, infographics
- Open data, digital repositories, and research collaboration platforms

UNIT III: Social & Behavioral Change (SBC) (12 Hours)

This unit covers key concepts, theories, and strategies of SBC in development contexts.

- Concept, evolution, and importance of SBC
- Role of SBC in health, education, gender, and rural development
- Role of Artificial Intelligence in SBC: personalization and targeted communication
- AI in communication: personalization, targeting, and content creation

- AI-driven analytics in knowledge management audience segmentation and behavior prediction
- Social media algorithms and their influence on behavior change communication
- Digital nudging and persuasive technologies for behavior change

UNIT IV: AI-Enabled SBC and Integration with Research (10 Hours)

This unit explores how AI and research innovations enhance SBC strategies and development communication outcomes.

- Integration of research evidence into communication planning
- Use of AI in campaign design and evaluation
- Case studies: AI in public health campaigns, governance, NGOs
- Ethical concerns: misinformation, algorithmic bias, digital divide
- Future trends: AI-driven communication systems and smart interventions

TUTORIAL
(Credits 1; Hours 15)

- Case studies on innovative research practices in development sector
- Designing online surveys and digital data collection tools
- Social media campaign analysis using analytics tools
- Hands-on training in AI tools for research (data analysis, transcription, referencing)
- Creating infographics and data visualization outputs
- AI-assisted content creation for communication campaigns
- Simulation exercise: designing an AI-enabled SBC campaign
- Research proposal development using innovative methods

Essential Readings:

UNIT I

- Kumar, R. (2021). *Research methodology: A step-by-step guide for beginners* (5th ed.). SAGE Publications India.

- NITI Aayog. (2022). *India's data empowerment and protection architecture*. Government of India.

UNIT II

- NITI Aayog. (2021). *Responsible AI for All: Strategy for India*. Government of India.
- Kelleher, J. D., & Tierney, B. (2018). *Data science*. MIT Press.
- Ministry of Electronics and Information Technology (MeitY). (2023). *AI for India 2030*. Government of India.

UNIT III

- Servaes, J. (2016). *Communication for development and social change* (2nd ed.). SAGE Publications.
- Ministry of Information and Broadcasting. (2022). *Guidelines for development communication and outreach*. Government of India.
- UNICEF India. (2021). *Social and Behaviour Change Communication strategy*.

UNIT IV

- UNICEF. (2020). *Social and Behaviour Change Communication Strategy Guide*.
- USAID. (2019). *Collaborating, Learning, and Adapting (CLA) Framework*.
- NITI Aayog. (2023). *National strategy for artificial intelligence: Updated roadmap*. Government of India.
- Digital India Corporation. (2022). *AI and digital transformation for inclusive development*.

Suggested Readings

- Melkote, S. R., & Steeves, H. L. (2015). *Communication for development: Theory and practice*. SAGE Publication.
- Suresh, L. (2025). *Knowledge management and digital transformation in organizations*. KBI Publishers.
- Sharma, A., & Singh, P. (2023). *Artificial intelligence and social development in India*. Academic Foundation.
- OECD. (2021). *Artificial intelligence in society*. OECD Publishing.
- World Bank. (2022). *Digital development and social change*. World Bank Publications.
- Ministry of Rural Development. (2023). *Communication strategies in rural development programmes*. Government of India.

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

DISCIPLINE SPECIFIC CORE COURSE

ICTs & DIGITAL TECHNOLOGY FOR DEVELOPMENT

CREDIT DISTRIBUTION,ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
ICTs & Digital Technology for Development	4	2	-	2	As per admission requirements	Should have studied papers in media

Learning Objectives

- To develop a comprehensive understanding about the role of new media in development of the society
- To acquire insights into technological progress and its application within the media sector
- To evaluate future opportunities and challenges in integrating AI and new media for development

Learning Outcomes

The students will be able to:

- Demonstrate an extensive understanding of new media and AI concepts, as well as their significance in development communication.
- Assess ethical considerations, digital rights, and the policy frameworks that regulate AI and new media.
- Formulate strategies that utilize participatory communication, digital literacy, and inclusive technologies to engage communities in development initiatives.

THEORY
(Credits 2, Hours 30)

Unit I: Introduction to Digital Technology for Development 8 Hours

This unit provides a critical analysis of the conceptual and theoretical foundations of new media, ICT4D, and digital development. It outlines the historical progression of media technologies and investigates essential concepts for development communication.

- Definitions: New Media, ICT4D, Digital Development
- Historical evolution of media technologies
- Theories of Development Communication (Diffusion of Innovations, Participatory Communication)

- Case studies: e-health, e-education, e-governance initiatives

Unit II: Media for Social Change **8 Hours**

This unit provides a critical examination of the transformative influence of new media within modern society. It investigates the historical development of digital platforms, the effects of social media on traditional media, community engagement, and the spread of information for social change.

- Salient features and advantage of new media over traditional media.
- History and evolution of new media and problems of access
- Social media and their impact on radio TV and Newspapers.
- Role of social media in mobilizing communities
- Social media for information dissemination, public awareness, and civic engagement
- Digital activism: hashtags, online petitions, and virtual protests

Unit III: AI for Development **8 Hours**

This unit investigates the incorporation of AI and digital technologies in participatory development, highlighting the importance of community involvement, digital inclusion, and accessibility. It analyses the use of AI in various sectors while critically evaluating future prospects, challenges, and ethical implications within development contexts.

- Community engagement using digital and AI tools
- Digital literacy and inclusive AI adoption
- Digital inclusion, accessibility & marginalized groups
- Applications of AI in development: poverty prediction, climate change, healthcare -
- AI for health, agriculture, education, governance and public administration
- AI for disaster management and crisis communication
- AI for SDGs (UN Sustainable Development Goals)
- Future AI in development: opportunities and challenge

Unit IV: Ethics, Governance, and Policy in AI and New Media **6 Hours**

This unit provides a critical analysis of the ethical, social, and regulatory aspects of AI and new media in the context of development. It addresses various issues such as accountability, data protection, misinformation, as well as the national and international frameworks that govern the responsible and secure utilization of emerging technologies.

- AI ethics: fairness, transparency, accountability, bias mitigation
- Data protection, privacy, and digital rights and responsible data use
- AI safety, security, and risk assessment
- Virtual Reality (VR) and Augmented Reality (AR) in development applications
- Deepfakes, misinformation & content authenticity
- Social, cultural, and economic impacts of AI and new media technologies
- National and international AI strategies and regulatory frameworks

PRACTICAL

(Credits 2, Hours 60)

- Design a digital campaign on any social or development issue using hashtags, storytelling, and community engagement.
- Evaluate real-world examples of e-health, e-education, e-governance, or AI-based development projects
- Analysing an AI or social media intervention for fairness, privacy, bias, and compliance with national/international policies.
- Identify and analyze some examples of misinformation or deepfakes on social media and propose strategies to verify content authenticity.

Essential Readings

Unit - I

- Heeks, R. (2018). *Information and communication technology for development (ICT4D)* (3rd ed.). Routledge.
- Servaes, J. (2015). *Communication for development and social change* (2nd ed.). Sage Publications.
- Narayan, S. S., & Narayanan, S. (Eds.). (2016). *India connected: Mapping the impact of new media*. SAGE Publications India.

Unit - II

- Ihsaniyati, H., Sarwoprasodjo, S., Muljono, P., & Gandasari, D. (2023). The use of social media for development communication and social change: A review. *Sustainability, 15*(3), 2283. https://doi.org/10.3390/su15032283
- Narayan, S. S., & Narayanan, S. (Eds.). (2016). *India connected: Mapping the impact of new media*. SAGE Publications India.
- Khalasa, N., et al. (2025). *Digital pulse: Shaping the future of media and communication*. Bhumi Publishing.

Unit - III

- Penh, B. (2025). AI-powered social media for development in low- and middle-income countries. *Media and Communication, 13*. https://doi.org/10.17645/mac.9577
- Sanyal, K., & Chakrabarti, R. (2020). *Artificial intelligence and India*. Oxford University Press.

Unit - IV

- Batool, A., Zowghi, D., & Bano, M. (2024). Responsible AI governance: A systematic literature review. *arXiv*. https://arxiv.org/abs/2401.10896
- Giralt Hernández, E. (2024). Towards an ethical and inclusive implementation of artificial intelligence in organizations: A multidimensional framework. *arXiv*. https://arxiv.org/abs/2405.01697
- Hogenhout, L. (2021). A framework for ethical AI at the United Nations. *arXiv*. https://arxiv.org/abs/2104.12547

Suggested Readings

- Beniwal, A. (Ed.). (2023). *Artificial intelligence, ethics, and the digital society: Pathways to sustainable development*. Deep Science Publishing.

- Floridi, L. (Ed.). (2021). *Ethics, Governance, and Policies in Artificial Intelligence*. Springer
- Kak, S. (2024). *The Age of Artificial Intelligence*. Garuda Prakashan.
- Liu, Z., & Zheng, Y. (2022). *AI Ethics and Governance: Black Mirror and Order*. Springer
- Mishra, S. (2021). Digital Cultures (1st ed.). Routledge. https://doi.org/10.4324/9781003155225
- Rainer Mühlhoff. (2021). *The ethics of AI: Power, critique, responsibility*. Bristol University Press.

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

DISCIPLINE SPECIFIC CORE COURSE

MONITORING & EVALUATION FOR ACCOUNTABILITY & LEARNING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Monitoring & Evaluation for Accountability & Learning	**4**	**3**	**-**	**1**	**As per admission requirements**	**Should be aware of concept of programme monitoring and evaluation**

Learning Objectives

1. To understand the conceptual and theoretical foundations of monitoring, evaluation, and learning in development programmes.
2. To gain the ability to design and apply MEL frameworks and tools for planning, implementation, and assessment of social and behavioural change initiatives.
3. To critically analyse the use of MEL systems for improving accountability, adaptive learning, and evidence-based policy-making.

Learning Outcomes

The students will be able to:

1. Differentiate between monitoring, evaluation, and learning functions within the development cycle.
2. Construct and operationalize a logical framework and results-based management system for a development project.
3. Design appropriate qualitative and quantitative indicators and data collection tools.
4. Apply participatory and adaptive MEL approaches in real-world contexts.

THEORY
(Credits 3, Hours 45)

Unit I: Frameworks of Monitoring, Evaluation & Learning (12 hours)

This unit explores the evolution, purpose, principles and related approaches to MEL.

- Evolution and purpose of M&E in development practice
- Relationship between Monitoring, Evaluation, and Learning (MEL)
- Principles of Results-Based Management (RBM)
- Theories of Change and Logical Framework Approach (LFA)
- Key terminology and standards (OECD-DAC, UNDP, World Bank)

Unit II: Implementing Monitoring Systems for Accountability (10 hours)

This unit focusses on the various frameworks and indicators required for setting up monitoring systems.

- Monitoring frameworks and indicator development
- Types of indicators: input, output, outcome, and impact
- M&E tools and approaches
- Use of ICT, AI and digital tools for monitoring
- Ethical considerations and data quality assurance

Unit III: Evaluation Designs and Methods (13 hours)

This unit explores the various types of evaluation designs.

- Types of evaluation: formative, summative, process, impact, developmental
- Evaluation design: experimental, quasi-experimental, and mixed-methods approaches
- Participatory and utilization-focused evaluation
- Gender responsive evaluations
- Reporting, dissemination, and stakeholder engagement
- Learning from evaluation: feedback loops and adaptive management

Unit IV: Learning, Knowledge Management and Policy Linkages (10 hours)

This unit focusses on the several linkages of MEL systems.

- Integrating learning within MEL systems
- Organizational learning and reflective practice
- Knowledge management tools and platforms for MEL
- Communicating results for advocacy and decision-making

PRACTICAL
(Credits 1; Hours 30)

- Interactive lectures and seminars
- Group exercises for developing log frames, indicators, and theories of change
- Case study analysis of M&E reports from UN/NGOs
- Field assignments for data collection and learning reflection
- Data collection tools and frequency
- MIS, dashboards, participatory tools
- Case studies of MEL in social and behavioural change (SBC), gender, and sustainable development programmes

Essential Readings:

Unit-I

- OECD Development Assistance Committee. (2019). *Better criteria for better evaluation: Revised evaluation criteria definitions and principles for use*. OECD Publishing.
- UNDP. (2021). *Handbook on planning, monitoring and evaluating for development results* (Updated ed.). United Nations Development Programme.

- UNICEF. (2015). *Theory of change: UNICEF guidance document*. United Nations Children's Fund.

Unit-II

- UNDP. (2021). *Handbook on planning, monitoring and evaluating for development results* (Updated ed.). United Nations Development Programme.
- Yim, M., & Gomez, R. (2021). ICT4D evaluation: Its foci, challenges, gaps, limitations, and possible approaches for improvement. *Information Technology for Development, 27*(4), 684–708. https://doi.org/10.1080/02681102.2021.1951151
- Magis-Weinberg, L., Ballonoff Suleiman, A., & Dahl, R. E. (2021). Context, development, and digital media: Implications for very young adolescents in LMICs. *Frontiers in Psychology, 12*, 632713. https://doi.org/10.3389/fpsyg.2021.632713

Unit-III

- NTRAC. (2020). *Learning from monitoring and evaluation: Reflections on practice*. INTRAC.
- OECD Development Assistance Committee. (2019). *Better criteria for better evaluation: Revised evaluation criteria definitions and principles for use*. OECD Publishing.
- Patton, M. Q. (2011). *Developmental evaluation: Applying complexity concepts to enhance innovation and use*. Guilford Press.
  (Actively used in post-2015 evaluation practice and curricula)

Unit-IV

- USAID. (2019). *Collaborating, learning and adapting (CLA) framework*. United States Agency for International Development.
- UNDP. (2021). *Handbook on planning, monitoring and evaluating for development results* (Updated ed.). United Nations Development Programme.

Suggested Readings:

- World Bank. (2012). *Designing a Results Framework for Achieving Results: A How-to Guide*. Washington, DC.
- Mayne, J. (2017). *Theory of Change Analysis: Building Robust Theories of Change*.*Canadian Journal of Program Evaluation*, 32(2), 155–173.
- Crawford, P., & Bryce, P. (2003). *Project Monitoring and Evaluation: A Method for Enhancing the Efficiency and Effectiveness of Aid Project Implementation*. *International Journal of Project Management*, 21(5), 363–373.
- UNICEF (2020). *Monitoring Results for Equity System (MoRES)*. UNICEF Evaluation Office.

Suggested Supplementary Online Resources

- UNICEF Evaluation Office: https://evaluation.unicef.org
- OECD-DAC Evaluation Criteria: https://www.oecd.org/dac/evaluation/
- BetterEvaluation Platform: https://www.betterevaluation.org/
- USAID Learning Lab: https://usaidlearninglab.org/

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
STATISTICS AND DATA MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Statistics and Data Management	4	3	0	1	As per admission requirements	Nil

Learning Objectives

- To develop understanding of fundamental and advanced statistical concepts used in research and data analysis.
- To enable students to apply descriptive and inferential statistics for real-world decision-making.
- To strengthen ability to formulate hypotheses, select appropriate statistical tests, and interpret outputs.
- To prepare students for quantitative research, industry analytics, and academic data projects.
- To train students in using Excel and SPSS for data handling, visualization, and interpretation.

Learning Outcomes

The students would be able to:

- Explain key concepts in descriptive and inferential statistics.
- Organize, clean, and summarize datasets using appropriate statistical tools.
- Apply probability distributions, correlation, regression, and hypothesis testing.
- Use Excel and SPSS for data visualization, statistical testing, and reporting.
- Interpret statistical outputs and draw valid conclusions for research decisions.
- Design and execute quantitative data analysis workflows independently.

THEORY
(Credits 3; Hours 45)

UNIT I: Introduction and descriptive Statistics **12 Hours**

This unit will introduces the foundations of statistics and techniques for summarizing and describing data.

- Definition, scope, and applications of statistics

- Types of data: qualitative and quantitative
- Scales of measurement
- Classification & tabulation of data
- Graphical and visual representations
- Measures of central tendency: mean, median, mode
- Measures of dispersion: range, variance, standard deviation, coefficient of variation
- Skewness and kurtosis: meaning and interpretation

UNIT II: Probability and Probability Distributions **10 Hours**

This unit explores probability concepts and major statistical distributions.

- Basic probability concepts: Addition & multiplication theorems
- Random variables: discrete and continuous
- Binomial and Normal distributions
- Sampling theory & sampling distributions
- Central Limit Theorem

UNIT III: Correlation and regression **8 Hours**

This unit focuses on analysing relationships between variables.

- Correlation: Pearson and Spearman correlation
- Simple linear regression: model, estimation, interpretation
- Multiple linear regression: assumptions, multicollinearity, model building

UNIT IV: Hypothesis Testing and Non-Parametric Methods **15 Hours**

This unit introduces hypothesis testing frameworks and non-parametric alternatives for non-normal data.

- Concept of hypothesis: null & alternative
- Types of errors, significance levels, p-value
- Parametric tests:
    - z-test
    - t-test (one sample, independent, paired)
    - Chi-square test
- Non-parametric tests:
    - Mann–Whitney U test
    - Wilcoxon signed-rank test
    - Kruskal–Wallis test
- Interpretation and reporting of statistical results
- Research Conclusion and recommendations

Practical
(Credits 1; 30 hours)

1. Data Entry, Coding & Cleaning: Importing data, handling missing values, variable labels, Excel formulas.
2. Descriptive Statistics & Visualization: Mean, Standard Deviation, frequency tables, histograms, boxplots (Excel + SPSS).
3. Cross-Tabulation & Chi-Square Test: PivotTables in Excel; Crosstabs in SPSS.
4. Correlation Analysis: Pearson & Spearman correlations; scatterplots.
5. Simple Linear Regression: Trendline in Excel; Regression output in SPSS.
6. Multiple Regression: Model summary, coefficients, interpretation using SPSS.
7. t-Tests: Independent, paired, and one-sample t-tests in SPSS.
8. ANOVA (One-way & Two-way): Running ANOVA and post-hoc analysis.
9. Non-Parametric Tests: Mann-Whitney, Wilcoxon, Kruskal–Wallis in SPSS.
10. Report Generation & Interpretation
11. Preparing APA-style tables, graphs, and interpretations in Excel/SPSS.

Essential Readings

UNIT - I

- Bluman, A. G. (2018). *Elementary statistics: A step by step approach* (10th ed.). McGraw-Hill Education.
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.). CreateSpace Independent Publishing Platform. (Available at http://www.openintro.org/stat/textbook.php)
- Healey, J. F. (2016). *Statistics: A tool for social research* (10th ed.). Cengage Learning.
- Levin, R. I., Rubin, D. S., Rastogi, S., & Siddiqui, M. H. (2017). *Statistics for management* (8th ed.). Pearson Education India.

UNIT- II

- Devore, J. L. (2016). *Probability and statistics for engineering and the sciences* (9th ed.). Cengage Learning.
- Gupta, S. C., & Kapoor, V. K. (2019). *Fundamentals of mathematical statistics* (12th ed.). Sultan Chand & Sons.
- Montgomery, D. C., & Runger, G. C. (2018). *Applied statistics and probability for engineers* (7th ed.). Wiley.

UNIT - III

- Kutner, M. H., Nachtsheim, C. J., Neter, J., & Li, W. (2019). *Applied linear statistical models* (6th ed.). McGraw-Hill Education.
- Wooldridge, J. M. (2020). *Introductory econometrics: A modern approach* (7th ed.). Cengage Learning.

UNIT IV

- Field, A. (2018). *Discovering statistics using IBM SPSS statistics* (5th ed.). Sage Publications.

- Gibbons, J. D., & Chakraborti, S. (2016). *Nonparametric statistical inference* (5th ed.). CRC Press.

Suggested Readings

- Field, A. (2025). *Discovering Statistics Using IBM SPSS Statistics* (6th ed.). Sage.
- Kalyanaraman, K., Ramanathan, H. N., & Harikumar, P. N. (2025). *Statistical Methods for Research: A Step-by-Step Approach Using IBM SPSS*. Atlantic Publishers.
- Healey, J. F., & Donoghue, C. (2021). *Statistics: A Tool for Social Research and Data Analysis* (11th ed.).

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

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

DISCIPLINE SPECIFIC CORE COURSE

CONSUMER BEHAVIOUR AND SUSTAINABLE DEVELOPMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Consumer Behaviour and Sustainable Development	**4**	**3**	**1**	**0**	**As per admission requirements**	**Should be aware of basics of Communication Concepts & Theories**

Learning Objectives

1. To understand the concept and theories of consumption and its linkages with production, distribution, and policy perspective.
2. To develop an understanding of consumption behaviour of individuals, families and communities in diverse socio-economic contexts.
3. To familiarise students with the linkages between consumption, environment, poverty, resources used and sustainable development.
4. To understand the role of people's initiatiatives, nationally and globally in promoting sustainable consumption .
5. To introduce communication and SBCC perspectives for promoting sustainable and responsible consumption.

Learning Outcomes

After completing this course, students will be able to:

1. Understand the meaning ,concept and theories of consumption and it's relationship with production , public policy and resource use
2. Analyse the inter-linkages between consumption practices, resource use and sustainable development at local, national and global levels in preservation of people's rights and sustainable consumption
3. Critically examine consumer rights, responsibilities, protections and public policy frameworks.
4. Understand the role of people's initiatives nationally and globally in preservation of people’s right for sustainable consumption

THEORY

(Credits 3; Hours 45)

UNIT I: Understanding Consumption Behaviour of Families and Communities 12 Hours

This unit introduces the meaning and dimensions of consumption, locating families and communities as key consumption units, and exploring factors shaping consumption in different socio-economic and cultural settings.

- Consumption: concept ,theories, linkages with production, distribution, public policy resource use; implications for families and communities.

- Determinants of consumption behaviour: economic, cultural, social, psychological and technological factors
- Historical and contemporary patterns of consumption: local, national and global perspectives
- Differences in consumption practices: rural–urban, North–South, class, gender and life-cycle perspectives
- Theories and models for understanding consumer behaviour (brief overview)
- Production, distribution and marketing strategies and their implications for consumption choices

UNIT II: Consumption, Health, Environment, Poverty and Sustainable Development 12 Hours

This unit focuses on the linkages between consumption, resource use and sustainable development, highlighting challenges of over-consumption, environmental degradation and inequity.

- Consumption and sustainable development: linkages between consumption, production, public policy health,environment, resource use and lifestyle
- Sustainable Development Goals (SDGs): goals and targets related to responsible consumption and production; environment, health, poverty, literacy etc. (SDG 12)
- Carbon footprint, lifestyle, and impact on environment
- Indicators related to consumption, inequality and sustainability: national and global overviews
- Case illustrations of unsustainable vs. sustainable consumption practices in food, clothing, housing, mobility, digital products

UNIT III: Consumers, Rights, Responsibilities and Public Policy 11 Hours

This unit examines consumers as rights-bearing citizens, the policy and legal frameworks governing consumption, and the role of consumer movements.

- Indian families as consumption units: vulnerabilities and constraints
- Problems faced by consumers in India: rural, urban and tribal perspectives, Challenges and opportunities in emerging economies
- Consumer protection in India: history and evolution of the consumer movement
- Consumer rights and responsibilities: laws, safeguards and grievance mechanisms (overview)
- Theories and models of consumer behaviour
- Role of consumer organisations, civil society and citizen groups – national, regional and global

UNIT IV: Communication, SBCC and Sustainable Consumption 10 Hours

This unit introduces behavioural and communication perspectives for promoting sustainable consumption and responsible consumer behaviour.

- Behaviour Change Communication (BCC) and Social and Behaviour Change Communication (SBCC) perspectives on consumption
- Advocacy and campaigns for sustainable consumption and public interest, people movements in protection of their righs (illustrative national/global campaigns)
- Elements, tools and techniques for consumer education and awareness (mass media, social media, community media, IEC)
- Networking, lobbying and mobilising pressure groups for sustainable consumption and policy advocacy
- Designing simple SBCC-based ideas for responsible consumption among youth, families and communities

TUTORIAL
(Credits 1; Hours 15)

- Mapping Personal Consumption: Recording and analysing students' own weekly consumption patterns (food, clothing, mobility, digital use), identifying unsustainable practices and alternatives.
- Case Study Analysis: Case studies on sustainable vs. unsustainable consumption (e.g., fast fashion, plastic usage, food waste, energy use).
- Policy & Campaign Review: Review of selected national/global campaigns and policies on sustainable consumption; group presentations.
- Consumer Rights Exercise: Reading and summarising key consumer protection provisions and applying them to real or simulated cases.
- Designing a Micro SBCC Concept: Group activity to conceptualise a small SBCC idea (poster/social media reel/community event) for promoting one sustainable consumption practice in the local context.
- Consumer choices and behaviours: Identify the consumers determine eco-friendliness of products.
- Designing for sustainability: Process, product and systems innovation – improved production processes, eco-friendly products, innovative low-impact technologies, supply chain management

Essential Readings

UNIT-I

- Stillerman, J. (2015). *The sociology of consumption: A global approach*. Polity Press.
- Reisch, L. A., & Thøgersen, J. (Eds.). (2016). *Handbook of research on sustainable consumption*. Edward Elgar Publishing.
- Mukherjee, S., & Banerjee, N. (2019). Consumption patterns, inequality and development in India. *Economic and Political Weekly, 54*(44), 45–53.
- Narayan, S. S., & Narayanan, S. (2016). *India connected: Mapping the impact of new media*. SAGE Publications India..

UNIT- II

- Reisch, L. A., & Thøgersen, J. (Eds.). (2016). *Handbook of research on sustainable consumption*. Edward Elgar Publishing.
- United Nations Environment Programme. (2017). *Sustainable consumption and production: A handbook for policymakers*. UNEP.
- Government of India, NITI Aayog. (2019). *India's voluntary national review on the implementation of the Sustainable Development Goals*. NITI Aayog.

UNIT- III

- Government of India. (2019). *The Consumer Protection Act, 2019*. Ministry of Consumer Affairs, Food & Public Distribution.
- Rao, S., & Bansal, S. (2020). Consumer protection and grievance redressal mechanisms in India. *Indian Journal of Public Administration, 66*(2), 214–229.
- Sharma, A., & Gupta, R. (2017). Consumer awareness and protection in emerging Indian markets. *Journal of Consumer Policy, 40*(3), 343–360. https://doi.org/10.1007/s10603-017-9349-5

UNIT- IV

- McKenzie-Mohr, D. (2018). *Fostering sustainable behavior: An introduction to community-based social marketing* (4th ed.). New Society Publishers.
- UNICEF. (2020). *Social and behavior change communication for sustainable development*. UNICEF.
- Kumar, R., & Purohit, H. (2019). Role of communication strategies in promoting sustainable consumption in India. *Media Watch, 10*(3), 485–499.

Suggested Readings

- FICCI/UNEP, 2015. Designing a Sustainable Financial System for India: Interim Report. Available at: http://ficci.in/spdocument/20546/UNEP-Interim-Report.pdf
- UNDP projects on environmental aspects related to SCP in India; Available at: http://www.in.undp.org/content/dam/india/docs/UNDP%20Fact%20Sheet%20-%20MEFCC.pdf
- UNIDO projects on cleaner production topics; Available at: http://www.unido.org/en/where-wework/asiaandthepacific/selected-projects.html

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

DISCIPLINE SPECIFIC ELECTIVE

FOOD SYSTEMS & NUTRITION SECURITY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Food Systems & Nutrition Security	4	3	0	1	As per admission requirements	Should be aware of basic concepts of food & nutrition

Learning Objectives

- To Understand the concepts, components, and functioning of food systems and their influence on nutrition, health, and sustainability.
- To analyze national and international policies, programs, and interventions for improving food and nutrition security.
- To evaluate the roles of key national and international organizations in combating malnutrition and supporting nutrition security initiatives.

Learning Outcomes

The students would be able:

- Identify and classify forms of food insecurity and understand the factors contributing to nutritional insecurity at household and community levels.
- Gain knowledge of community-based nutrition interventions and design strategies for behavior change and nutrition education.
- Critically evaluate policies and programs and assess their impact on nutrition outcomes.

Unit I: Introduction to food systems **10 hours**

This unit provides an overview of food systems, explores the interconnections between agriculture, environment, nutrition, and health, and compares traditional and modern food systems. Elucidating the role of key stakeholders in shaping food outcomes. The unit also highlights food system outcomes and explains how these are measured using national and international indicators.

- Definition and components of food systems (production, processing, distribution, consumption)
- Inter linkages between agriculture, environment, nutrition, and health
- Traditional vs. modern food systems
- Stakeholders: farmers, consumers, private sector, government, NGOs

- Food system outcomes: availability, access, utilization, stability
- Indicators of Food system : National and international indicators

Unit II: Food Security and Nutrition Security 12 hours

This unit elucidates the concept and dimensions of food security, investigates the various forms of food insecurity along with their determinants. Additionally, the unit assesses food security policies in India, household coping mechanisms, and global trends in malnutrition, which encompass undernutrition, micronutrient deficiencies, and overweight/obesity.

- Introduction, forms of food insecurity: Hunger, poverty, chronic hunger
- Conceptual framework of food security: availability of food, accessibility of food, consumption & utilization
- Food security concept, types of food insecurity; poverty, hunger and malnutrition
- Factors leading to food & nutritional insecurity in India, household food insecurity and coping strategies
- Determinants of Nutrition Security: Biological, socioeconomic, cultural, environmental factors, Gender and nutrition
- Evidence on global malnutrition patterns: undernutrition, micronutrient deficiencies, overweight/obesity

Unit III: Policies and intervention for Food & Nutrition Security 10 hours

This unit conducts a critical examination of policies and interventions designed to ensure food and nutrition security on both national and international scales. It offers a comprehensive analysis of significant Indian initiatives and global frameworks. Additionally, it explores policies that affect agricultural production, subsidies, and food pricing, assessing their impact on dietary quality, accessibility, and overall nutrition security.

- National Polices: National Food Security Act (NFSA), Public Distribution System (PDS), ICDS, POSHAN Abhiyan, Mid-Day Meal Scheme
  International policies: Right to Food, Sustainable Food Policy frameworks
- FAO Voluntary Guidelines on Food Security and Nutrition and WHO Nutrition Guidelines
- UN Sustainable Development Goals (SDG 2: Zero Hunger, SDG 3: Good Health)
- Policies affecting crop production, subsidies, and food prices and its impact on nutritional outcomes

Unit IV: Community Health & Nutrition 13 hours

This unit provides an integrated understanding of the role of India's traditional knowledge systems promoting community health & nutrition. It explores diet diversity across the lifecycle, the role of organic and nutri-sensitive farming systems, and the importance of home, kitchen, and herbal gardens in ensuring household nutrition security. It also touches upon the role of nutrition education and behavior change processes**.**

- Indian Knowledge Systems & Traditional Foods
- Diet Diversity across lifecycle
- Nutri-Sensitive Integrative Farming Systems (NSIFS),Organic Farming & Natural Farming
- Kitchen, Home & Herbal Garden

- Role of bio-diverse farming in nutrient-rich food production
- Farm-to-plate approaches for improved household nutrition
- Valorization and Food Waste Management
- Successful Indian models of nutrition-sensitive agriculture
- Role of nutrition in disease prevention and health promotion
- Nutrition education and behavior change strategies
- Role of National organizations in combating malnutrition: ICMR, ICAR, NIN.
- Role of International organizations in combating malnutrition: CARE, UNICEF, WHO, FAO, ICRISAT.

PRACTICAL
(Credits 1; Hours 30)

- Analyze coverage and impact of nutrition programs such as ICDS, Mid-Day Meal Scheme, or POSHAN Abhiyan.
- Prepare information materials (posters, pamphlets) for awareness campaigns on healthy diets and food security.
- Develop and implement nutrition education sessions and behavior change communication strategies for a target group.
- Visits to community nutrition centers, ICDS centers, local farms, or PDS outlets to observe real-world implementation of policies and programs.
- Interaction with farmers, program staff, and beneficiaries to understand practical challenges in food and nutrition security.
- Documentation of Traditional Foods: Conduct field visits or family interviews to document traditional local recipes, their cultural significance, and nutritional benefits; create a visual or digital compilation.
- Diet Diversity Assessment
- Nutri-Sensitive Farming Mini-Project: Visit an organic, natural, or NSIFS farm to observe practices; prepare a short report on nutrient-dense crops, soil health methods, and sustainability components.

Essential Readings

UNIT -I

- FAO, IFAD, UNICEF, WFP, & WHO. (2021). *The state of food security and nutrition in the world 2021: Transforming food systems for food security, improved nutrition and affordable healthy diets for all*. FAO. https://doi.org/10.4060/cb4474en
- HLPE. (2017). *Nutrition and food systems*. High Level Panel of Experts on Food Security and Nutrition, FAO.
- Pingali, P., Aiyar, A., Abraham, M., & Rahman, A. (2019). *Transforming food systems for a rising India*. Palgrave Macmillan.

UNIT -II

- FAO, IFAD, UNICEF, WFP, & WHO. (2023). *The state of food security and nutrition in the world 2023*. FAO.
- Gillespie, S., Haddad, L., Mannar, V., Menon, P., & Nisbett, N. (2015). The politics of reducing malnutrition: Building commitment and accelerating progress. *The Lancet, 382*(9891), 552–569. https://doi.org/10.1016/S0140-6736(13)60842-9
- Swaminathan, M. S., & Bhavani, R. V. (2019). Food production & availability—Essential prerequisites for sustainable food security. *Indian Journal of Medical Research, 149*(6), 681–690. https://doi.org/10.4103/ijmr.IJMR_2078_18

UNIT- III

- Government of India. (2019). *The National Food Security Act (NFSA), 2013: Updated operational guidelines*. Ministry of Consumer Affairs, Food & Public Distribution.
- NITI Aayog. (2021). *POSHAN Abhiyaan: Strategy and progress report*. Government of India.

UNIT - IV

- CARE International. (2020). *Community-based nutrition programs and approaches*. CARE.
- Whitney, E., & Rolfes, S. R. (2020). *Understanding nutrition* (15th ed.). Cengage Learning.
- Aggarwal, A., & Drewnowski, A. (2019). The role of traditional food systems in improving nutrition security in India. *Current Developments in Nutrition, 3*(3), nzz003. https://doi.org/10.1093/cdn/nzz003
- Swaminathan, M. S. (2016). From Green Revolution to Evergreen Revolution: Pathways to sustainable nutrition security in India. *Current Science, 109*(3), 456–463.

Suggested readings

- Ministry of Women and Child Development, Government of India. *Integrated Child Development Services (ICDS) Scheme Guidelines*.
- Ministry of Health and Family Welfare, Government of India. *POSHAN Abhiyaan: National Nutrition Mission*.
- Ministry of Education, Government of India. *Mid-Day Meal Scheme Guidelines*.
- Indian Council of Medical Research (ICMR). (2020). *Nutrient requirements and recommended dietary allowances for Indians*. ICMR.
- National Institute of Nutrition (NIN). (2020). *Community nutrition and health reports*. NIN.
- World Health Organization (WHO). (2020). *Nutrition guidelines and global nutrition targets*. WHO.

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

DISCIPLINE SPECIFIC ELECTIVE

HUMAN CENTRED DESIGN & INNOVATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Human Centred Design & Innovation	**4**	**3**	**0**	**1**	**As per admission requirements**	**Should be aware of basic concepts of design**

Learning Objectives

1. To understand and apply design thinking and Human-Centered Design (HCD) principles to drive social and business innovation
2. To develop skills in user research, ideation, prototyping, and testing solutions for real-world challenges
3. To manage change initiatives using participatory and inclusive approaches
4. To analyze the design considerations of traditional and contemporary oral and visual media

Learning Outcomes

The students would be able to:

1. Apply UNICEF's HCD framework to design and implement user-centered solutions.
2. Design, prototype, and test innovative and sustainable solutions for diverse challenges.
3. Lead and manage change initiatives using participatory and inclusive approaches.
4. Understand the design considerations of traditional and contemporary oral & visual media and create innovative media.

THEORY
(Credits 3; Hours 45)

UNIT I: Foundations of Human Centred Design 12 Hours

This unit explores the fundamentals of Human Centred Design touching upon key concepts and theories

- Definitions, Concepts, and Theories of Design for Innovation & Change
- Elements of Art & Principles of Design
- Introduction to Design Thinking: Principles and Process
- Evolution of Human-Centered Design and its intersection with development communication
- Core principles of HCD (empathy, iteration, co-creation, problem reframing)
- Introduction to steps of Human Centred Design Thinking
- Inclusion, and Participatory Design in HCD
- Understanding development ecosystems: stakeholders, power dynamics, and communication flows
- Ethics of participatory design in vulnerable communities
- Case studies of HCD in social innovation and development projects

UNIT II: Innovation & Change 10 Hours

This unit discusses the fundamentals of innovation strategies, and change management frameworks to drive sustainable and impactful transformations in organizations and society.

- Theories of Creativity and Innovation
- Systems Thinking in Innovation
- Innovation Management and Organizational Change
- Behavioral Science and Change Adoption
- Business Model Innovation and Value Proposition
- Ethics and Sustainability in Innovation

UNIT III: Groundwork for effective Design 12 Hours

This unit highlights the potential of research, ideation and prototyping for an effective design strategy. It explores the key imperatives for ensuring efficacy in message design to drive change.

- Research plans for design and development contexts
- Ethnographic and participatory research methods (interviews, observations, shadowing, immersion)
- Tools for insight generation: empathy maps, journey maps, stakeholder maps
- Cultural sensitivity and inclusion strategies in fieldwork
- Synthesizing qualitative data into user needs, motivations, and pain points
- Ideation frameworks
- Low-fidelity vs. high-fidelity prototyping (storyboards, mock-ups, role-plays, digital prototypes)
- Rapid experimentation and feedback loops
- Documentation and communication of design rationale
- Message design: Principles, Approaches and Appeals
- Audience Analysis

UNIT IV: Media for effective Design 11 Hours

This unit highlights the potential of varied types of media that can be used to bring about change. It explores the continuum of traditional to contemporary media and its efficacy in harnessing change.

- Media Classification
- Methods for using media effectively
- Traditional Media for Change: Puppetry, Street Theatre, Games, Scrolls etc
- Digital Media for Change: Social Media, Apps, Digital billboards, Dashboards etc., Pitching and Storytelling for Innovation
- Strategy planning, implementation & evaluation

PRACTICAL
(Credits 1; Hours 30)

- Ideation Techniques: Brainstorming, SCAMPER, and Mind Mapping
- Rapid Prototyping
- Minimum Viable Product (MVP) Development
- User Testing and Iterative Design
- Real-world Problem-Solving through Live Projects
- Development of Design/Innovation Kit: Traditional Media
- Development of Design/Innovation Kit: Contemporary Media
- Innovation Metrics and Performance Evaluation
- Creating design using open source software and Artificial Intelligence (AI)
- Presenting an Innovation Solution

Essential Readings

UNIT- I

Brown, T., & Katz, B. (2019). *Change by design: How design thinking transforms organizations and inspires innovation* (Rev. ed.). New York, NY: Harper Business.

Sanders, E. B. N., & Stappers, P. J. (2018). Co-creation and the new landscapes of design. *CoDesign*, 14(2), 1–16. https://doi.org/10.1080/15710882.2018.1464921

Thomas, P. N. (2019). *Communication and development: Freirean perspectives*. New Delhi, India: Sage Publications.
(For participatory design, ethics, power, and development ecosystems)

UNIT- II

Christensen, C. M., Raynor, M. E., & McDonald, R. (2015). What is disruptive innovation? *Harvard Business Review*, 93(12), 44–53.

Lewrick, M., Link, P., & Leifer, L. (2020). *The design thinking toolbox: A guide to mastering the most popular and valuable innovation methods*. Hoboken, NJ: Wiley.

Thaler, R. H., & Sunstein, C. R. (2021). *Nudge: Improving decisions about health, wealth, and happiness* (Updated ed.). New Haven, CT: Yale University Press.

UNIT- III

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). Thousand Oaks, CA: Sage Publications.

Martin, R. L. (2019). *The design of business: Why design thinking is the next competitive advantage*. Boston, MA: Harvard Business Review Press.

Singhal, A., & Papa, M. J. (2016). *Organizing for social change: A dialectic journey of theory and praxis*. New Delhi, India: Sage Publications.
(Message design, audience analysis, communication for change)

UNIT- IV

Melkote, S. R., & Steeves, H. L. (2015). *Communication for development: Theory and practice for empowerment and social justice* (2nd ed.). New Delhi, India: Sage Publications.

Rao, S. (2020). Traditional media, culture, and development communication in India. *Journal of Creative Communications*, 15(1), 21–35. https://doi.org/10.1177/0973258619892356

Singhal, A., Cody, M. J., Rogers, E. M., & Sabido, M. (Eds.). (2015). *Entertainment-education and social change: History, research, and practice*. New York, NY: Routledge.

Suggested Readings

- Tiwari, S. R., & Swarup, R. R. (2024). *Design thinking: A comprehensive textbook*. Wiley India.
- Agarwal, A. (2024). *Design thinking: A framework for applying design thinking in problem solving*. Cengage India.
- Balagurusamy, E. (2024). *Design thinking: A beginner's perspective*. McGraw Hill Education India.
- Lal, D. M. (2021). *Design thinking – Beyond the sticky notes*. SAGE Publications India.

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

DISCIPLINE SPECIFIC ELECTIVE
SOCIAL ENTREPRENEURSHIP

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Social Entrepreneurship	4	3	1	0	As per admission requirements	Nil

Learning Objectives

- To understand the core concepts, principles, and relevance of social entrepreneurship in developmental contexts.
- To analyze community problems and apply participatory communication approaches for designing social enterprise solutions.
- To develop practical skills in planning, implementing, and evaluating sustainable social enterprise models.

Learning Outcomes

The students would be able to:

- Demonstrate a comprehensive understanding of social entrepreneurship concepts, models, and global/national trends.
- Conduct problem analysis and needs assessment to formulate innovative social enterprise ideas addressing community issues.
- Design and implement communication and outreach strategies to engage beneficiaries, partners, and funders effectively.
- Prepare and present a detailed social enterprise project proposal including organizational structure, budgeting, marketing, and sustainability plan.

THEORY
(Credits 3; Hours 45)

UNIT I: Introduction to Social Entrepreneurship 10 Hours

This unit provides foundational understanding of social entrepreneurship—its meaning, evolution, and relevance in the development sector. It covers differences between social, commercial, and non-profit models.

- Concept of Social entrepreneur & entrepreneurship –Need, Major Functions and Areas of Social Entrepreneurship.
- Evolution and historical development of social entrepreneurship globally.
- Role of social entrepreneurs as innovators and change agents.
- Differences between social, commercial, and non-profit enterprise models.

UNIT II: Innovation, Creativity, and Social Enterprise Design 10 Hours

This unit emphasizes the role of innovation and creativity in shaping effective social enterprises and community-based co-creation.

- Importance of innovation and creativity in developing impactful social enterprises.
- The social entrepreneurial ecosystem: institutions, markets, communities and environment
- Prototyping, testing, and improving solutions for sustainable and scalable social enterprise design.
- Social Entrepreneurial Role Models- Bunker Roy, Jeroo Billimoria, Anshu Gupta, Vijaya Mahajan, Azim Premji.

UNIT III: The Social Entrepreneurship Process 12 Hours

This unit introduces key models explaining how social entrepreneurship unfolds, including the Timmons Model, the PCDO Framework, the Case Model, and the Social Entrepreneurship Framework.

- The Timmons Model of the Entrepreneurship Process, The PCDO (The People, Context, Deal, and opportunity) frame work,
- Sources of Social Entrepreneurship -Public Sector, Private Sector, Voluntary Sector.
- Social Entrepreneurship in Practice: The Grameen Bank (GB), The Self Employment Women's Association (SEWA), Aravind Eye Hospital, Barefoot College, Bhartia Samruddhi Investment &Consulting Services (BASIX), Narayana Hrudayalaya Institute of Medical Sciences, Technology Informatics Design Endeavour (TIDE)

UNIT IV: Social Enterprise Project Development and Applications 13 Hours

The unit includes activities such as problem diagnosis, stakeholder consultations, pilot testing small interventions, and preparing a comprehensive social enterprise proposal.

- Identifying a community problem for social enterprise development.
- Feasibility & Viability Analysis
- Conducting stakeholder consultations to gather insights and validate needs.
- Planning operational strategies, resource requirements, and budgeting.
- Pilot testing small-scale interventions and documenting findings.
- Final preparation and presentation of a comprehensive social enterprise project proposal.

TUTORIAL
(Credit 1; Hours 15)

- Field-based identification of a community problem and documentation of needs.
- Stakeholder consultations and analysis to validate issues and explore opportunities.
- Application of design thinking and human-centered design to generate solution ideas.
- Development of a Social Business Model Canvas or social enterprise framework.
- Creation of basic prototypes or small-scale tests of proposed solutions.
- Compilation and presentation of a comprehensive social enterprise project proposal.

Essential Readings

UNIT- I

- Doherty, B., Meehan, J., & Meehan, B. (2024). *Management for social enterprise*. SAGE Publications.
- Bornstein, D., & Davis, S. (2016). *Social entrepreneurship: What everyone needs to know*. Oxford University Press.
- Datta, P. B., & Gailey, R. (2016). Empowering women through social entrepreneurship: Case study of a women's cooperative in India. *Entrepreneurship Theory and Practice, 36*(3), 569–587.

UNIT- II

- Mulgan, G. (2019). *Social innovation: How societies find the power to change*. Policy Press.
- Doherty, B., Haugh, H., & Lyon, F. (2016). Social enterprises as hybrid organizations: A review and research agenda. *International Journal of Management Reviews, 16*(4), 417–436. https://doi.org/10.1111/ijmr.12028
- Gupta, A. K. (2016). *Grassroots innovation: Minds on the margin are not marginal minds*. Penguin Random House India.

UNIT- III

- Dees, J. G., Emerson, J., & Economy, P. (2018). *Enterprising nonprofits: A toolkit for social entrepreneurs* (Rev. ed.). John Wiley & Sons.
- Mahajan, V. (2017). *Financing poor: Lessons from Indian experiences*. Sage Publications India.

UNIT- IV

- Doherty, B., Meehan, J., & Meehan, B. (2024). *Management for social enterprise*. SAGE Publications.
- British Council. (2016). *Social value economy: A survey of the social enterprise landscape in India*. British Council India.

Recommended Readings

- Deakins, D., & Scott, J. M. (2024). *Entrepreneurship: A contemporary and global approach* (2nd ed.). SAGE Publications.
- Haski-Leventhal, D. (2021). *Social entrepreneurship and innovation: International case studies and practice*. SAGE Publications.
- Kerlin, J. A. (Ed.). (2017). *Shaping social enterprise: Understanding institutional context and influence*. Emerald Publishing.
- Chandra, Y., & Shang, L. (2023). *Social entrepreneurship in Asia: Sustainability, innovation, and impact*. Routledge.
- Phillips, W., Lee, H., Ghobadian, A., O'Regan, N., & James, P. (2015). Social innovation and social entrepreneurship: A systematic review. *Group & Organization Management, 40*(3), 428–461.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

POVERTY, LIVELIHOOD SYSTEMS & SKILLING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Poverty, Livelihood Systems & Skilling	**4**	**3**	**1**	**0**	**As per admission requirements**	**Nil**

Learning Objectives

1. To develop an advanced understanding of the concepts, theories and measures of poverty and well-being in both national and global contexts.
2. To examine various livelihood systems and frameworks, with emphasis on vulnerability, resilience, and institutional influences.
3. To analyse skilling ecosystems, labour-market dynamics and policy interventions that shape employability and sustainable livelihoods.
4. To build students' capacity to design, implement and evaluate poverty-reduction, livelihood and skilling programmes using research tools and evidence-based approaches.

Learning Outcomes

The students would be able to:

1. Critically evaluate different poverty frameworks and apply appropriate measurement tools to assess poverty and welfare conditions.
2. Analyse and interpret livelihood strategies using the Sustainable Livelihoods Framework**,** identifying factors that influence vulnerability and resilience.
3. Assess and compare skilling policies, training programmes and labour-market interventions**,** with the ability to identify gaps and propose improvements.
4. Develop a policy brief that integrates poverty analysis, livelihood systems and skilling strategies using relevant data and research methods.

THEORY

(Credits 3; Hours 45)

Unit 1: Understanding Poverty and Well-being 9 Hours

This unit explores the conceptual foundations, determinants, patterns, and measurements of poverty and inequality. It encompasses global and national frameworks, multidimensional indicators, and socio-economic contexts that influence deprivation.

- Concepts of poverty: absolute, relative, chronic, and transient poverty
- Determinants of poverty and inequality: structural, demographic, and policy factors
- Approaches to poverty analysis: income-based, basic needs, social exclusion, capability approach
- Measurement tools: poverty lines, headcount ratio, poverty gap, MPI, vulnerability assessments

- Spatial and social dimensions of poverty: rural–urban differences, caste, gender, and regional variations
- Global and national poverty trends and policy debates

UNIT II: Livelihood Systems **13 Hours**

This unit provides an understanding of various livelihood systems that operate across rural and urban contexts. It examines the nature of formal and informal sector livelihoods, different types of traditional and modern livelihood options, and the role of farming, non-farm activities, and wage labour in sustaining households.

- Formal and Informal Sector Livelihoods – Nature, characteristics, and differences.
- Types of Livelihoods – Traditional, modern, and sustainable livelihood options.
- Farming and Allied Activities – Crop cultivation, livestock, fisheries, sericulture, and horticulture.
- Non-Farm Activities – Rural artisanship, small-scale manufacturing, and micro-enterprises.
- Wage Labour – Agricultural labour, construction work, and casual/seasonal employment.
- Forest-Based Livelihoods – Collection of NTFPs, timber, firewood, and other forest resources.
- Migration-Based Livelihoods – Seasonal/long-term migration and its impact on income and households.
- Rural and Urban Livelihoods – Characteristics, differences, and employment patterns.
- Socio-Economic Zones, Industrial Policies & Women's Livelihood Opportunities – SEZs, industrial policy impacts, and schemes promoting women's employment and entrepreneurship.

Unit III: Labour Markets & Employability **10 Hours**

This unit provides an understanding of labour market structures, workforce dynamics, and factors influencing employability in India. It examines the role of skills, technology, policies, and institutions in shaping employment opportunities. The unit also explores challenges, trends, and strategies for enhancing employability across sectors.

- Labour Market Structure and Characteristics – Formal vs. informal labour markets, workforce composition, demand–supply dynamics.
- Determinants of Employability – Skills, education, work experience, digital literacy, and soft skills.
- Technological Change and Future of Work – Impact of automation, AI, and digital transformation on employment patterns.
- Employment Policies and Labour Reforms – Key government initiatives, labour codes, and programmes promoting employment.
- Youth and Women Employability – Barriers, opportunities, career readiness, and inclusion strategies.
- Strategies for Enhancing Employability – Career guidance, vocational training, apprenticeships, industry linkages, and skill development initiatives.

Unit IV: Livelihood Interventions, Innovations, and Policy Frameworks 13 Hours

This unit provides an in-depth understanding of skilling frameworks, types and aspects of skill development, national skilling structures, and regulatory bodies in India.

- Livelihood promotion programmes in India: MGNREGA, NRLM, DAY-NULM, Start-Up India
- Financial inclusion and social protection mechanisms (Jan Dhan Yojana, SHGs, cooperatives)
- Innovations in livelihood development – FPOs, social enterprises, and digital platforms
- Linking livelihoods and skills to ESG, SDGs, and inclusive growth strategies
- Introduction to Skilling – Importance, relevance, and role of skills in employment and development.
- Types of Skilling – Technical/vocational skills, soft skills, life skills, digital skills, and entrepreneurial skills.
- National Skill Development Mission (NSDM) **–** Vision, objectives, institutional structure and components.
- Sector Skill Councils (SSCs) **–** Roles, industry partnership, National Occupational Standards (NOS) and Qualification Packs (QPs).
- NCVET & Regulatory Framework – Accreditation, quality assurance, certification standards in skilling ecosystem.
- AI for Skilling and Training Delivery – Use of AI tools for personalized learning, digital simulations, and adaptive training modules.

TUTORIAL
(Credits 1; Hours 15)

- Review two national or international skilling programmes and compare their design, accreditation models and outcomes.
- Conduct a livelihood analysis for a selected community/occupational group using the Sustainable Livelihoods Framework (SLF).
- PRA-based activities such as asset mapping, seasonal calendars (simulation exercises).
- Interview with a small-scale or informal worker, a short report identifying key needs, potential skill gaps, and suggest feasible employment or skilling opportunities that could enhance their livelihood.

Essential Readings

Essential Readings

UNIT- I

- Alkire, S., Kanagaratnam, U., & Suppa, N. (2018). The global Multidimensional Poverty Index (MPI): 2018 revision. *World Development, 103*, 93–115. https://doi.org/10.1016/j.worlddev.2017.10.026
- Sen, A. (2017). *Collective choice and social welfare* (Expanded ed.). Harvard University Press.
- Government of India. (2022). *National Multidimensional Poverty Index: A progress review*. NITI Aayog.
- World Bank. (2022). *Poverty and shared prosperity 2022: Correcting course*. World Bank Publications.

UNIT- II

- Ellis, F., & Freeman, H. A. (2016). *Rural livelihoods and poverty reduction policies*. Routledge.
- Rao, N., & Raju, S. (2020). Gendered livelihoods and household well-being in India. *World Development, 127*, 104739. https://doi.org/10.1016/j.worlddev.2019.104739
- Government of India. (2021). *Situation assessment of agricultural households and land and livestock holdings of households in rural India*. National Statistical Office.

UNIT- III

- Mehrotra, S., & Parida, J. K. (2019). India's employment crisis: Rising education levels and falling non-farm employment. *Development and Change, 50*(4), 1157–1184. https://doi.org/10.1111/dech.12515
- Papola, T. S., & Sahu, P. P. (2020). *Labour markets in India: Issues and perspectives*. Springer India.
- International Labour Organization. (2020). *India employment report: Youth employment and skill development*. ILO.

UNIT -IV

- Government of India. (2023). *Skill India digital ecosystem and AI integration framework*. Ministry of Skill Development and Entrepreneurship.
- Kumar, R., & Chattopadhyay, S. (2017). Financial inclusion, SHGs, and women's livelihoods in India. *Journal of Rural Development, 36*(2), 179–198.

Suggested Readings

- Jha, S. (2018). *Informal Sector and Urban Livelihoods in India*. Routledge.
- ILO. (2016). *Skills for Employment Policy Briefs.* Geneva: International Labour Organization.
- NITI Aayog. (2018). *Skill India: Policies, Progress and Case Studies*. Government of India.
- Banerjee, A. & Duflo, E. (2011). *Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty.* Public Affairs.
- Krishnaswamy, K. & Shekhar, R. (2019). *Labour Markets in India: Issues and Perspectives*. Oxford University Press.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
CIVIL SOCIETY AND VOLUNTEER MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Civil Society and Volunteer Management	**4**	**3**	**1**	**0**	**As per admission requirements**	**Nil**

Learning Objectives

1. To understand the evolution, concepts, and structures of civil society and its interactions with the state and market.
2. To analyse the role of CSOs in development, democracy, accountability, and governance.
3. To examine the principles, motivations, and management strategies of volunteerism across different contexts.
4. To explore methods for strengthening CSOs through capacity building, partnerships, innovation, and effective monitoring and evaluation.

Learning Outcomes

The students would be able to:

1. Explain key concepts of civil society and assess the functions and relationships of CSOs in contemporary society.
2. Critically evaluate how CSOs contribute to development, governance, advocacy, and social accountability.
3. Apply volunteer management principles to design and support effective volunteer engagement within CSOs.
4. Assess CSO performance using monitoring and evaluation frameworks and identify strategies to enhance organizational impact and sustainability.

THEORY
(Credits 3; Hours 45)

UNIT I: Civil Society – Meaning, Origins and Interpretation 10 Hours

This unit introduces the foundations of civil society, tracing its historical evolution, conceptual interpretations, and structural forms. It examines how civil society organizations (CSOs) function, the nature of their engagement with the state and market, and the role of Corporate Social Responsibility (CSR) in development partnerships.

- Meaning, concept, and evolution of civil society; historical & contemporary perspectives
- Types, structure, and functioning of CSOs
- Corporate Social Responsibility: concept, importance, dimensions, and development partnerships
- Relationships and partnerships between CSOs, government, and other stakeholders

UNIT II: Civil Society, Development, and Democracy 12 Hours

This unit explores the relationship between civil society and democratic governance. It covers ideological, socio-economic, and legal dimensions, along with the role of CSOs in people's movements, transparency, and accountability. It also assesses how globalization reshapes civil society structures and functions.

- Ideological, social, economic, and legal perspectives of civil society
- CSOs, people's movements, and the state
- Governance challenges in CSOs: accountability, transparency, and ethics
- Civil society's contributions to democracy and good governance
- Globalization and its impact on civil society

UNIT III: Volunteerism and Volunteer Management 12 Hours

This unit focuses on the concept, context, and practice of volunteerism. It unpacks types of volunteers, motivational drivers, and ethical considerations. Students learn the principles and strategies of volunteer management, planning volunteer roles, and aligning them with CSO needs.

- Concept, meaning, and context of volunteerism
- Types of volunteers: youth, community, corporate, digital/virtual
- Motivation, benefits, ethics, and determinants of volunteer engagement
- Volunteer management models, strategies, and organizational planning
- Volunteering as social exchange; volunteering on boards
- Resource mobilization and fundraising involving volunteers

UNIT IV: Strengthening Civil Society and Future Trends 11 Hours

This unit addresses strategies for enhancing CSO effectiveness through capacity building, advocacy, partnerships, and innovation. It also covers monitoring and evaluation practices, technology-enabled interventions, and emerging trends in civil society and volunteerism.

- Capacity building: leadership, governance, and institutional development
- Advocacy, communication, and networking strategies
- Monitoring, evaluation, and impact assessment of CSO initiatives
- Innovation in civil society: social entrepreneurship and digital platforms
- Future trends: digital civil society, hybrid/gig volunteering, sustainability and regulatory challenges

TUTORIAL
(Credits1;Hours 15)

- Map and profile a CSO based on its mission, structure, and stakeholders.
- Review a CSR project to understand partnerships and development strategies.
- Analyse a case study of an Indian people's movement and its civil society role.
- Prepare a transparency and accountability assessment checklist for a CSO.
- Conduct a short volunteer motivation survey among youth or community members.
- Design a volunteer management plan including recruitment, orientation, and retention.
- Create a brief fundraising or resource-mobilization activity involving volunteers.
- Prepare an advocacy or digital communication campaign on a selected social issue.

Essential Readings:

UNIT- I

- Tandon, R., & Mohanty, R. (2016). *Civil society and governance in India*. SAGE Publications India.
- Kumar, A. (2017). Civil society in India: Evolution, role, and challenges. *Indian Journal of Public Administration, 63*(2), 223–238.
- Government of India. (2021). *National voluntary guidelines on social, environmental and economic responsibilities of business*. Ministry of Corporate Affairs.

UNIT- II

- Tandon, R. (2016). *Democracy, civil society, and governance*. Routledge India.
- Jayal, N. G. (2017). *Citizenship and its discontents: An Indian history*. Harvard University Press.
- Kabeer, N., & Sanyal, P. (2018). NGOs, civil society, and development accountability. *World Development, 105*, 1–14. https://doi.org/10.1016/j.worlddev.2017.12.007

UNIT- III

- Piatak, J. S., & Sowa, J. E. (2024). *Volunteer management: A strategic approach*. Routledge.
- Bano, M. (2018). Volunteering and social action in India: Trends and motivations. *Nonprofit Policy Forum, 9*(3), 1–18. https://doi.org/10.1515/npf-2017-0040
- United Nations Volunteers. (2018). *State of the world's volunteerism report: The thread that binds*. UNV.

UNIT- IV

- Anheier, H. K., Krlev, G., & Preuss, S. (2017). Social innovation as impact-driven change. *Stanford Social Innovation Review, 15*(2), 42–47.
- Tandon, R., & Brown, L. D. (2018). *Civil society organizations and the state: Governance, accountability and innovation*. Routledge.
- World Economic Forum. (2023). *Digital transformation of civil society*. WEF.

Suggested Readings:

- Anheier, H. K., & Toepler, S. (2023). *Nonprofit organizations: Theory, management, policy* (4th ed.). Routledge.
- Brudney, J. L. (2016). Designing and managing volunteer programs. In D. O. Renz (Ed.), *The Jossey-Bass handbook of nonprofit leadership and management* (pp. xx–xx). John Wiley & Sons.
  (*Add page numbers if known.*)

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

COMMUNITY ORGANIZATION; SOCIAL POLICY AND DEVELOPMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Community Organization; Social Policy and Development	**4**	**3**	**1**	**0**	**As per admission requirements**	**Nil**

Learning Objectives

1. To understand the organization and structure of different types of communities and the dynamics of social change.
2. To study the theoretical and practical inquiry in the field of Social Policy and Planned interventions.
3. To critically analyze contemporary social policies in developed and developing countries.

Learning Outcomes

The students would be able to:

1. Understand the key concepts and perspectives related to community, social structure and social systems
2. Familiarize with the elements and theories of community relationship development, community organization and their mobilization for development goals
3. Gain insight into the development of social policies and planned interventions and their impact on the social and administrative organization of developed and developing countries.
4. Recognise the diversity of human needs and societal responses to social injustice and disadvantage

THEORY

(Credits 3; Hours 45)

UNIT I: Concept of community, community structures and Community Organization 16 Hours

- Concept of Community : Traditional and modern, Characteristics of Community Sociological thoughts on community- Marx, Durkheim, Gandhi, Tagore and others
- Types of communities- Tribal, Rural and Urban and changing norms and customs
- Concept of Community Organization, Need, Importance
- Principles and new ways of community organization, Indian and International

- Relationship of community organization and community development, Approaches and goals of community development-Welfare to rights based approaches
- Theoretical orientation of communities- Functionalism, Structuralism, Social Action theory, Conflict theory
- Types of Community organizations : Collectives, Cooperatives, Civil society groups, Community Based Organsations (CBOs) and their roles in mobilizing people and influencing outcomes –(select case studies)
- Care and welfare systems in communities: mechanisms and institutions

UNIT II: People's Participation & Dynamics of Change in Community 10 Hours

- Scope, and Levels of people's participation for change
- Stakeholder's participation analysis in development programmes and initiatives- select case studies
- People's movements : Issues, processes and outcomes in relation to Gender, Environment, Employment, Governance, Sustainable consumption and others.
- Role of Mass Media and ICTs in community based change.

UNIT III: Development & Indian Economic Environment 14 Hours

- Meaning and concept of growth, development and sustainable development, Challenges of sustainable development -local, national and global linkages
- Indicators of development, Characteristics of less developed countries and SDGs
- Poverty & issues of inequality, inequity and vulnerability ; illiteracy and Unemployment ; Urbanisation and Migration
- Population Demographics & Transition
- Urban and rural Livelihood issues-Indian agriculture- status, prospects and challenges; Agricultural policy;
- New Economic Policy, Industrialisation, Liberalization and Globalisation
- International protocols and agreements and their impact on Indian population
- Panchayti Raj Institutions and Democratic Governance

UNIT IV: Social Policy & Planning: Approaches and Perspectives 12 Hours

- History and trajectory of social policy and social planning in selected developed and developing countries,
- Social policy in India - Health care, Education, Housing, Employment and Welfare and Social security.
- Social policy and planning- Issues of capacity, accountability, transparency and their relationship to beneficiary publics and the state.
- Community participation in social policy and policy changes

TUTORIAL
(Credits 1; Hours 15)

- Orientation to community and community organizations
- Rapport Formation, Skills and methods of community contact
- Community mobilization techniques
- Theoretical Foundation : Working in the community (Groups, Social Structure, Community Dynamics)
- Participatory Techniques and People's participation
- Using PLA in community (Time based, space based and relation based methods)

- Structured Techniques and Community Issues
  i. Developing tools and for understanding community issues
  ii. Application of tools in community situation
  iii. Analysis of techniques for eliciting participation & understanding issues
- Analysis of Community Issues
- Need Assessment
- Key dimensions of issue in community, community groups and other stakeholders involved.
- Developing a plan for addressing community issues
- Critical analysis of social policy and programme and it's implementation and impact at the grassroot level.

Essential Readings:

UNIT- I

- Manohar, S., & Rao, M. S. A. (2016). *Indian society: Themes and perspectives*. New Delhi, India: Oxford University Press.
- Midgley, J. (2017). *Social development: Theory and practice*. Thousand Oaks, CA: Sage Publications.
- Singh, K. (2016). *Community development: Principles and practices*. New Delhi, India: Sage Publications.

UNIT- II

- Arnstein, S. R. (2019). A ladder of citizen participation revisited. *Journal of the American Planning*
- Cornwall, A. (2016). *Participation in development: Theory and practice*. New York, NY: Routledge.
- Manyozo, L. (2017). *Media, communication and development: Three approaches*. New Delhi, India: Sage Publications.
- Shah, G. (2018). *Social movements in India: A review of literature*. New Delhi, India: Sage Publications.

UNIT- III

- Government of India. (2019). *NITI Aayog: Strategy for New India @75*. New Delhi, India: Government of India.
- Kabeer, N. (2016). *Gender, labour markets and inclusive growth*. New Delhi, India: Sage Publications.

UNIT- IV

- Deacon, B. (2017). *Global social policy and governance*. London, UK: Sage Publications.
- Hall, A., Midgley, J., & Wright, S. (2019). *Social policy for development*. Thousand Oaks, CA: Sage Publications.
- Midgley, J., & Conley, A. (2017). *Social work and social development: Theories and skills for developmental social work*. New York, NY: Oxford University Press.

Suggested Readings:

- Sonar, G. (2016). *Social Policy, Planning and Development: An Indian Experience*. Germany: LAP LAMBERT Academic Publishing.

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

DISCIPLINE SPECIFIC CORE

Advanced Research Methodology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Advanced Research Methodology	**2**	**2**	**0**	**0**	**As per admission requirements**	**Should be aware of Basic Research Methodology and Statistics**

Learning Objectives

- Construct a theoretical framework for diverse research problems.
- Compare and contrast the design elements of experimental, quasi-experimental, and non-experimental studies.
- Formulate appropriate research questions for a mixed-methods design.

Learning Outcomes

After completing the course, students will be able to:

- Design complex research projects, including mixed-methods and longitudinal studies, appropriate for advanced academic inquiry.
- Determine the internal and external validity of research designs.
- Evaluate and justify the selection of advanced sampling techniques.

THEORY
(Credits 2; Hours 30)

UNIT I: Theoretical Foundation of Research Design and Sampling. 12 Hours

This unit covers the theoretical foundation of research designs, issues of internal and external validity, advanced literature review techniques including systematic reviews and meta-analysis, and approaches to theory building through inductive, deductive, and abductive reasoning. The unit also discusses sophisticated sampling techniques, sample size determination, and sources of sampling error, enabling learners to design rigorous and generalizable research studies.

- Types of research designs and internal external validity perspectives
- Literature Review Approaches: Systematic Review, Meta Analysis, scoping review and others
- Theory Building and testing in qualitative and quantitative researches
- Sampling Frameworks and strategy, Sample size calculation and error
- Advanced Quantitative Sampling Techniques: Stratified Cluster Sampling, Multi-Stage Sampling, Adaptive Sampling and other techniques.
- Sampling in qualitative research: Techniques and issues of depth, context and data saturation

UNIT II: Quantitative, Qualitative and Mixed Methods Research Design. 18 Hours

This unit focuses on the different types of research designs including, advanced quantitative research designs, key qualitative research methodologies and mixed-methods research designs and strategies for integrating qualitative and quantitative data.

- Quantitative Research Design
    - Advanced Experimental Designs: RCT Designs, Factorial designs, Repeated Measures (within-subjects),
    - Longitudinal Studies: Panel, Cohort, and Trend designs
    - Cross-Sectional: Survey and other quantitative designs.
- Qualitative Methodologies
    - Aspects of robust Qualitative research designs.
    - Iteration, Data Triangulation,Saturation and Reflexivity in qualitative research
    - Ethnographic Research, Case Study Research, Narrative Inquiry
    - Action and Participatory Researches: philosophical and methological perspectives

- Mixed-Methods Design
    - Convergent Parallel, Explanatory Sequential, Exploratory Sequential designs; Notation systems (e.g., QUAL to QUAN)
    - Integration and Mixing: Strategies for data mixing, synthesis, and developing a unified interpretation.

Essential Readings UNIT I

This unit introduces the perspectives that guide advanced research practices. Students will study different types of research designs, key issues of validity, advanced literature review methods, and approaches to theory development. The unit also covers details of sampling for research. The unit aims to strengthen students' conceptual clarity and ability to link theory, methodology, and research questions in scholarly inquiry.

- Black, J. A., & Champion, D. J. (1976). *Methods and issues in social research*. John Wiley & Sons
- Burns, Robert, B. (2000) *Introduction to Research Methods*(4th ed.,chaps8-10, 20-22, 29,30). Sage Publications

- Kothari, C.R., Garg, Gaurav (2023) *Research Methodology: Methods and Techniques*
- (5th ed.) New Age International Publishers
- Mandlik, D., Kalkar, P., Singh C. (2025) *Advanced Research Methodologies and Practices*. Taylor & Francis.
- Mallik, R., Kurian, M., Prajapati, V., Pithadia, M. (2023) *Advanced Research Methodology*. AG Publishing House
- Neuman, W. Laurence (2008) Social Research Methods: Qualitative and Quantitative Approaches (6th ed., chaps3-5) Pearson Education

UNIT II

This unit focuses on advanced quantitative research designs including experimental, longitudinal, and cross-sectional designs. Emphasis is placed on understanding complex experimental structures and multivariate approaches. Through this unit, students will also develop an understanding of advanced qualitative research approaches such as ethnographic, case study, narrative, and participatory research designs, focusing on their key features and applications. The unit will further discuss mixed-methods research designs that integrate quantitative and qualitative approaches. Students will examine different mixed-methods designs and strategies for integrating data during analysis and interpretation.

- Baumeister, M., Kropf, S., & Pöpper, C. (2022). Quantile-based MANOVA: A new tool for inferring multivariate data in factorial designs. *arXiv preprint arXiv:2211.15484*. https://doi.org/10.48550/arXiv.2211.15484
- Black, J. A., & Champion, D. J. (1976). *Methods and issues in social research*. John Wiley & Sons
- Burns, Robert, B. (2000) *Introduction to Research Methods*(4th ed.,chaps8-10, 20-22, 29,30). Sage Publications
- Caruana, E. J., Roman, M., Hernández-Sánchez, J., & Solli, P. (2015). Longitudinal studies. *Journal of Thoracic Disease*, *7*(11), E537–E540. https://doi.org/10.3978/j.issn.2072-1439.2015.10.63
- Creswell, J. W., & Creswell, J. D. (2023). *Research design: Qualitative, quantitative, and mixed methods approaches* (6th ed.). SAGE Publications, Inc.
- Denzin, N. K., Lincoln, Y. S., Giardina, M. D., & Cannella, G. S. (Eds.). (2024). *The SAGE handbook of qualitative research* (6th ed.). SAGE Publications
- Kerlinger, F. N. (1973). *Foundations of Behavioral research* (2nd ed., chaps 7,8, 17- 26). Holt, Rinehart, and Winston.
- Kothari, C.R., Garg, Gaurav (2023) *Research Methodology: Methods and Techniques* (5th ed.) New Age International Publishers
- Luthfiandana, R., Santioso, L. L., Febrian, W. D., Soehaditama, J. P., & Sani, I. (2024). Qualitative research concepts: Phenomenology, grounded theory, ethnography, case study, narrative. *Scientia Journal of Applied Management*, *2*(1), 26–36. https://doi.org/10.38035/sjam

- Minc, S. D., Chandanabhumma, P. P., Sedney, C. L., Haggerty, T. S., Davidov, D. M., & Pollini, R. A. (2022). Mixed methods research: A primer for the vascular surgeon. *Seminars in Vascular Surgery*, *35*(4), 447–455. https://doi.org/10.1053/j.semvascsurg.2022.09.003
- Neuman, W. Laurence (2008) Social Research Methods: Qualitative and Quantitative Approaches (6th ed., chap 13) Pearson Education
- Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in implementation research. *Administration and Policy in Mental Health and Mental Health Services Research*, *42*(5), 533–544. https://doi.org/10.1007/s10488-013-0528- y

Suggested Readings

- Dagher, D., & Khan, M. (2025). Writing a systematic review and meta-analysis: A step-by-step guide. *Sports Health*, *17*(5), 885–890. https://doi.org/10.1177/19417381251364686
- M. E. R. (2020). Methodological integrity in critical qualitative research. *The Counseling Psychologist*, *48*(6), 848–874. https://doi.org/10.1177/0011000020950348
- Findley, M. G., & Faten, A. (2024). Vulnerability in research ethics: A call for assessing vulnerability and implementing protections. *Proceedings of the National Academy of Sciences*, *121*(11), https://doi.org/10.1073/pnas.2322821121

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

DISCIPLINE SPECIFIC CORE

TOOLS FOR RESEARCH

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Tools for Research	2	2	0	0	As per admission requirements	Should be aware of Advanced Research Methodology and Statistics

Learning Objectives

- Design and evaluate quantitative and qualitative tools.
- Understand data processing and effectively utilize common statistical packages.
- Apply coding techniques, and utilize digital platforms and AI in research design and analysis.

Learning Outcomes

After completing the course, students will be able to:

- Differentiate between major quantitative and qualitative tools.
- Demonstrate proficiency in data entry, coding and cleaning.
- Utilize digital platforms and AI effectively in the formulation, administration, and data collection.
- Proficiently utilize specialized software for qualitative data analysis and quantitative statistical testing.

THEORY
(Credits 2; Hours 30)

UNIT I: Quantitative Tools, Data Coding and Analysis **15 Hours**

This unit introduces quantitative research tools, including questionnaires and rating scales, and the principles of their development, reliability, and validity. It covers major rating scales and key steps in scale construction, analysis, and standardization, along with the use of digital platforms and AI for tool development and administration. This unit also focuses on quantitative data coding, entry, and cleaning using statistical software. It introduces variable definition, handling of missing data, basic automation through spreadsheet and open-source tools, and familiarization with commonly used statistical software for data management and analysis.

- Quantitative measurement, Variables and construct definition
- Quantitative tool development: Questionnaire, Semi-Structured Interview Schedules.
- Rating Scales Types and Development Process: Item Generation and Content Validation, Item Analysis, Internal Consistency and Factor Analysis, Scale Refinement and Standardization.
- Coding styles and Approaches.
- Assessment of Reliability and Validity of quantitative Tools.
- Data Coding, Entry and Cleaning (Statistical Software): Handling missing data (listwise/pairwise deletion).
- Automation and Data Scripting: Advance excel, other open-source software for data import/export.
- Statistical Software Usage: Navigating common statistical packages
- Leveraging Digital Tools and AI for enhancing the Research lifecycle: Tool Formulation, Data collection and Analysis

UNIT II: Qualitative Tools, Data Coding and Analysis 15 Hours

This unit introduces major qualitative research tools and their application in research. It covers the development and validation of qualitative tools, descriptive and thematic coding techniques, and the use of digital platforms and AI for qualitative data collection and analysis. This unit further focuses on qualitative data coding and analysis using qualitative data analysis software. It introduces the interface and use of QDAS for importing, coding, cleaning, and managing text, audio, and video data, along with an overview of NVivo, ATLAS.ti, and other open-source tools.

- Qualitative tools: In-Depth Interview, Focus Group Discussion, Case Study, Observation, Diaries, Oral Narratives/Stories and others.
- Participatory tools : Types, characteristics and usage in qualitative and participatory researches.
- Developing Qualitative Tools: Tool selection and development, pilot testing and refinement.
- Validity of Qualitative Tools: Qualitative vs. Quantitative Validity, Methods for establishing validity for qualitative tools.
- Coding Techniques: Descriptive and thematic coding
- Digital Platforms and AI for development of qualitative tools and data analysis.
- Qualitative Data Analysis Software (QDAS) Interface: Importing, coding and cleaning different data types (text, audio, video)
- Overview of NVivo, ATLAS.ti and other open-source QDAS software

Essential Readings

UNIT I

This unit aims to build an understanding of quantitative tools used for the purpose of data collection. The unit introduces various types of quantitative data tools, their development and assessment of their

reliability and validity. This unit further introduces various rating scales and their development, validation and standardisation. The unit also includes the learning of coding and analysis of quantitative data, basics of data processing scripts and common statistical packages

- Creswell, J. W., & Creswell, J. D. (2023). *Research design: Qualitative, quantitative, and mixed methods approaches* (6th ed.). SAGE Publications.
- Cheema, J. R. (2014). Using listwise deletion to cope with missing data: A cautionary note. *Journal of Educational and Developmental Psychology, 4*(1), 127–134.
- Ghasemi, A., & Zahediasl, S. (2012). Normality tests for statistical analysis. *International Journal of Endocrinology and Metabolism, 10*(2), 486–489.
- Gotschall, T., & Gotschall, T. (2018). EndNote, Mendeley, RefWorks, Zotero: A comparative review. *Journal of Electronic Resources in Medical Libraries, 15*(1), 1–18.
- Hausner, E. T., & Hirt, S. J. (2020). Improving reproducibility in academic data-intensive research through computational workflows. *Frontiers in Research Metrics and Analytics, 5*(7).
- Johnson, R., & Witsel, M. (2018). ORCID: A necessary piece of infrastructure for global research evaluation. *Frontiers in Research Metrics and Analytics, 3*(28).

UNIT II

This unit introduces various types of qualitative tools used in research, their development, pilot testing and refinement. The unit also introduces techniques of establishing validity and of such qualitative tools of data collection. This section also discusses prominent digital and AI tools for qualitative research and provides an overview of qualitative data coding and analysis software.

- Allsop, D. B., Chelladurai, J. M., Kimball, E. R., Marks, L. D., & Hendricks, J. J. (2022). Qualitative methods with NVivo software: A practical guide for analyzing qualitative data. Psych, 4(2), 142–159.
- Al-Kassimi, M., & Al-Sharqi, A. (2020). Data visualization techniques: Model and taxonomy. International Journal of Research in Engineering and Science, 8(3), 44–53.
- Creswell, J. W., & Creswell, J. D. (2023). *Research design: Qualitative, quantitative, and mixed methods approaches* (6th ed.). SAGE Publications.
- Gotschall, T., & Gotschall, T. (2018). EndNote, Mendeley, RefWorks, Zotero: A comparative review. *Journal of Electronic Resources in Medical Libraries, 15*(1), 1–18.
- Johnson, R., & Witsel, M. (2018). ORCID: A necessary piece of infrastructure for global research evaluation. *Frontiers in Research Metrics and Analytics, 3*(28).
- Provalis Research. (n.d.). QDA Miner: Qualitative Data Analysis Software. Retrieved from https://provalisresearch.com/products/qualitative-data-analysis-software/
- Urban Institute. (2025). Urban Institute Data Visualization Style Guide. Retrieved from http://urbaninstitute.github.io/graphics-styleguide/
- Weninger, M. (2024). Open coding in qualitative research: A systematic review and guide. *ResearchGate* (preprint).

Suggested Readings:

- Kang, H. (2013). The prevention and handling of the missing data. *Korean Journal of Anesthesiology, 64*(5), 402–406.
- Kery, M., & Myers, M. (2020). Improving reproducibility in academic data-intensive research through computational workflows. *Frontiers in Research Metrics and Analytics, 5*(7).
- Saravanakumar, A. P., & Shitharth, S. (2023). A survey on sentiment analysis: Techniques, algorithms, and application areas. *Journal of King Saud University – Computer and Information Sciences, 35*(3).
- Takes, F. W. (2024). Gephi tutorial for graph/network visualization. Retrieved from https://github.com/franktakes/gephi-tutorial

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

DISCIPLINE SPECIFIC ELECTIVE

RURAL MARKETING AND DEVELOPMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Rural Marketing & Development	4	3	1	0	As per admission requirements	Should be aware of nature of rural communities and basics of marketing

Learning Objectives

- To understand the structure, behavior, and dynamics of rural markets within the broader context of rural development in India.
- To appreciate the marketing mix strategies, research tools, and communication approaches suitable for rural consumers and distribution environments.
- To analyze rural development programmes, innovations, and market linkages to evaluate their contribution to inclusive growth and sustainable livelihoods.

Learning Outcomes

The students will be able to:

- Critically assess rural consumer behavior and market characteristics using socio-economic and cultural frameworks.
- Design and evaluate marketing strategies and communication plans tailored to rural market needs and media environments.
- Examine and interpret rural development initiatives, value chains, and institutional mechanisms that influence rural markets.
- Propose innovative, sustainable, and technology-driven solutions to strengthen rural market systems and enhance rural livelihoods.

THEORY

(Credits 3; Hours 45)

Unit I: Understanding Rural Markets **12 Hours**

This unit introduces the concept, structure, and characteristics of rural markets in India. It explores rural consumers, demand patterns, and socio-cultural factors influencing purchase behavior.

- Rural Marketing Environment: Evolution, Nature and scope

- Structure of rural economy and market linkages
- Rural Consumer Behavior: Demographic and socio-economic profiles of rural consumers, income sources and expenditure patterns, demand patterns and consumption behavior, Household decision-making and cultural influences
- Segmenting, Targeting & Positioning in Rural Markets
- Rural market trends: digitalization, migration, remittances, Rural supply chains and distribution challenges
- Role of local markets (haats, melas) in rural commerce

Unit II: Rural Markets: The Marketing Mix 12 Hours

This unit focuses on 4Ps of the marketing mix in the context of the rural markets. It also throws light on rural marketing research process, tools and ethics.

- Product: Concept, classification, decisions
- Pricing: Pricing Basics and Strategies for rural markets
- Place: Rural distribution systems and last-mile delivery models, Channel Dynamics and behavior
- Promotion: Role of digital, social, and mobile technologies in rural marketing
- Rural media landscape: radio, folk media, community platforms
- Social marketing and behavior change communication in rural areas
- Rural Marketing Research: Process, Tools & Ethics
- Corporate initiatives and CSR in rural markets
- Case studies on rural marketing (HUL, ITC e-Choupal, Tata, Amul)

Unit III: Rural Development and Market Linkages 11Hours

This unit examines how rural development policies, institutions, and livelihood programmes shape rural markets, enabling income generation and economic participation.

- Rural development: concepts, objectives, and approaches
- Government schemes and institutions (NRLM, PMAY, MGNREGS, SHGs)
- Role of Panchayati Raj Institutions (PRIs) in local markets
- Agricultural development and its impact on rural markets
- Non-farm sector and rural enterprises
- Market linkages for farmers and producer groups
- Cooperatives, FPOs, and rural entrepreneurship
- Role of microfinance, credit institutions, and rural banks
- Value chain development in agriculture and rural products
- Case studies of successful rural development interventions

Unit IV: Innovations, Sustainable Development & Future of Rural Markets 10 Hours

This unit explores emerging innovations, sustainability pathways, and the future landscape of rural markets, emphasizing resilience and inclusive growth.

- Innovations in rural marketing (fintech, agritech, digital marketplaces)
- Sustainable rural development and green marketing
- Climate change impacts on rural markets and livelihoods
- E-commerce penetration and digital rural platforms
- Social enterprises and inclusive business models
- Public–private partnerships in rural development
- Rural tourism, crafts, and cultural industries
- Entrepreneurship development and start-up ecosystems
- Monitoring and evaluating rural market interventions
- Future trends: AI, smart villages, rural data systems

TUTORIAL
(Credits 1; Hours 15)

- Market Survey & Consumer Profiling
- Designing a Rural Communication Campaign
- Product Adaptation for Rural Markets
- Mapping a Rural Distribution Channel
- Rapid Market Assessment (Desk or Field-Based)
- Analysis of Government Programs Impacting Rural Markets
- Field Visit / Virtual Exposure Module
- Analysis of a Rural Marketing Case Study

Essential Readings

UNIT- I

- Kashyap, P., & Raut, S. (2022). *The rural marketing: Text and cases* (3rd ed.). SAGE Publications India.
- Government of India. (2021). *Situation assessment of agricultural households and rural consumption expenditure*. National Statistical Office, Ministry of Statistics and Programme Implementation.

UNIT- II

- Kashyap, P. (2019). Rural marketing strategies: Product, pricing, promotion and distribution challenges. *Journal of Business Research, 99*, 459–466. https://doi.org/10.1016/j.jbusres.2017.07.005
- Kotler, P., Kartajaya, H., & Setiawan, I. (2021). *Marketing 5.0: Technology for humanity*. Wiley.

- Government of India. (2020). *CSR and corporate engagement in rural development*. Ministry of Corporate Affairs.

UNIT- III

- Singh, S., & Singh, T. (2020). Farmer Producer Organizations in India: Linking farmers to markets. *Agricultural Economics Research Review, 33*(1), 1–14.
- Reddy, A. A., & Dev, S. M. (2019). Rural non-farm sector and employment diversification in India. *Indian Journal of Labour Economics, 62*(3), 437–456.
- Government of India. (2022). *National Rural Livelihoods Mission: Annual report*. Ministry of Rural Development.

UNIT- IV

- Prahalad, C. K. (2020). *The fortune at the bottom of the pyramid: Eradicating poverty through profits* (5th ed.). Pearson.
- Agarwal, A., & Brem, A. (2020). Strategic business transformation through technology in rural markets. *Technological Forecasting and Social Change, 155*, 119968. https://doi.org/10.1016/j.techfore.2020.119968
- Bairagi, S., & Fenton, J. (2021). Digital platforms and rural market transformation in India. *Information Technology for Development, 27*(3), 474–492.

Suggested Readings

- Krishnamacharyulu, C. S. G., & Ramakrishnan, L. (2019). *Rural marketing: Text and cases* (3rd ed.). Pearson.
- Venkatesh, P., & Suresh, P. (2021). *Rural economics*. Sage Publications India.
- Singh, G., & Pandey, A. (2022). *Rural development: Principles, policies, and management* (4th ed.). Sage Publications India.
- Neuwirth, R. (2017). *Stealth of nations: The global rise of the informal economy*. Anchor Books.
- Ray, G. L., & Mondol, S. (2022). *Research methods in extension education and social sciences* (2nd ed.). Kalyani Publishers.
- World Bank. (2020). *World development report 2020: Trading for development in the age of global value chains*. World Bank Publications

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

DISCIPLINE SPECIFIC ELECTIVE
PUBLIC ADMINISTRATION AND GOVERNANCE

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Public Administration and Governance	**4**	**3**	**1**	**0**	**As per admission requirements**	**Complete Undergraduate course**

Learning Objectives:

1. To understand the evolution, structure, and values of the Indian Public Administration system.
2. To analyse the ecosystem of governance, public policy, and accountability mechanisms in India.
3. To examine the integral role of communication in development administration and governance.
4. To develop skills for designing and evaluating effective communication strategies for public schemes and governance initiatives.

Learning Outcomes:

The student would be able to:

1. Explain the structure, evolution, and core principles of public administration in India.
2. Critically assess the roles of key institutions and accountability frameworks in Indian governance.
3. Analyse the interplay between communication, public policy, and development outcomes in the Indian context.
4. Apply practical tools for policy analysis, communication strategy design, and program evaluation relevant to the public sector.

THEORY
(Credits 3; Hours 45)

UNIT I: Indian Public Administration: Evolution, Structure, and Values 10 Hours

This unit introduces the foundations of the Indian administrative system, tracing its historical evolution and constitutional framework. It examines the structure of services and the core values of public service in India.

- Meaning, nature, scope, and significance of Public Administration
- Evolution of Public Administration in India

- The Constitutional Framework: Union, State, and Concurrent Responsibilities
- The Steel Frame: Structure and Role of All India Services (IAS, IPS, IFS) and other Central Services
- Foundational Values: Constitutional values, Ethical and Moral values, Professional values
- Sardar Patel's Vision, Code of Conduct, and Probity in Public Life

UNIT II: The Indian Governance Ecosystem: Institutions, Policy, and Accountability15 Hours

This unit explores the framework of governance in India, covering key institutions, the public policy process, decentralized governance, and mechanisms ensuring transparency and accountability.

- Conceptualizing Governance in India: Understanding Governance Structure in India, From Government to Participatory Governance
- Understanding the NITI Aayog in designing public policy in India.
- Stakeholders involved in the Public Policy Process in India.
- Key Institutions of Governance: Executive (PMO, Cabinet Secretariat), Legislature, and Constitutional Bodies (ECI, CAG, UPSC)
- Decentralized Governance: 73rd & 74th Amendments, Panchayati Raj Institutions, and Urban Local Bodies
- Accountability Mechanisms: The RTI Act 2005, CVC, Lokpal & Lokayuktas, Social Audit

UNIT III: Development Administration & Communication in India 10 Hours

This unit integrates communication into India's development framework, analysing flagship schemes, digital governance, and the role of media and behaviour change communication in public policy.

- The Philosophy and Practice of Development Administration in India
- Flagship Development Schemes as Case Studies (e.g., MGNREGA, NHM, SBM, PMJDY)
- Digital India and E-Governance: Aadhaar, UPI, and the JAM Trinity
- The Role of Media in Indian Governance
- Behaviour Change Communication (BCC) in Indian Public Policy.

UNIT IV: Applied Governance Communication: Indian Strategies and Campaigns 10 Hours

This unit focuses on the practical application of communication strategies in the Indian context, including campaign deconstruction, social marketing, grievance redressal, and monitoring & evaluation.

- Designing Communication Strategies for Indian Public Schemes
- Deconstructing Iconic Indian Government Campaigns.
- Social Marketing for Public Good in India
- Crafting Documents for Indian Governance: Policy Briefs and Public Notices
- Public Grievance Redressal in India: CPGRAMS, Role of Social Media
- Monitoring & Evaluating Governance Communication

TUTORIAL
(Credit 1; Hours 15)

- Profile a specific Indian Government Ministry/Department, analysing its structure and key schemes.
- Prepare a Policy Brief on a live State/Central Scheme for a District Magistrate.
- Conduct a Communication Audit of a recent public campaign
- File an RTI application to a local authority and analyse the response and process.
- Develop a Stakeholder Mapping and Communication Plan for a local civic issue.
- Simulate a Social Audit for a local MGNREGA project using official portal data.
- Design a grassroots-level IEC (Information, Education, and Communication) campaign for a public health issue.

Essential Readings:

UNIT- I

- Arora, R. K., & Goyal, R. (2018). *Indian public administration: Institutions and issues* (2nd ed.). New Age International Publishers.
- Government of India. (2020). *Code of conduct for civil servants*. Department of Personnel and Training (DoPT).

UNIT- II

- Chakrabarty, B., & Bhattacharya, M. (2020). *The governance discourse in India*. Oxford University Press.
- Agarwal, O. P., & Somanathan, T. V. (2020). *Public policy making in India: Issues and remedies*. Routledge India.
- Bhattacharyya, D. (2019). *Decentralisation and local governance in India*. Oxford University Press.

UNIT- III

- Singh, H. (2019). *Public administration in India: An emerging perspective*. Routledge India.
- Kulkarni, S., & Mahadevia, D. (2016). Development administration and governance reforms in India. *Indian Journal of Public Administration, 62*(3), 456–472.
- Sood, S., Sengupta, M., Mishra, P. R., & Jacoby, C. (2018). Behaviour change communication in Indian public health programmes. *Journal of Health Communication, 23*(7), 626–636.

UNIT- IV

- Nair, S. (2019). *Strategic communication for public governance in India*. SAGE Publications India.
- Kotler, P., & Lee, N. (2016). *Social marketing: Changing behaviors for good* (5th ed.). SAGE.

Suggested Readings:

- Dubey, S. (2020). *Development Communication and Public Policy*. Sage Publications.
- *NITI Aayog Strategy Documents and Three-Year Action Agenda*. NITI Aayog, Government of India.
- *Economic Survey of India* (Latest Edition). Ministry of Finance, Government of India.

- *Yojana and Kurukshetra Magazines* (Relevant Issues on Governance and Development). Publications Division, Government of India.
- *MeitY's E-Governance Assessment Frameworks*. Ministry of Electronics and Information Technology, Government of India.

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

DISCIPLINE SPECIFIC CORE COURSE
GENDER, DIVERSITY AND INCLUSION

CREDIT DISTRIBUTION,ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Gender, Diversity and Inclusion	**4**	**3**	**1**	**-**	**As per admission requirements**	**Should have studied a paper on gender**

Learning Objectives

1. To strengthen deep conceptual understanding of gender, power, identity, and social inequalities using feminist and intersectional perspectives.
2. To enable students to critically analyse how systems, institutions, and everyday practices shape inclusion and exclusion.
3. To build the capacity to design inclusive environments, policies, and organisational cultures rooted in gender justice and human rights.

Learning Outcomes

The students will be able to:

1. Explain and apply key gender theories, feminist frameworks, and intersectional analysis.
2. Critically assess how institutions produce exclusion based on gender, caste, class, sexuality, disability, and other identities.
3. Recommend practical, ethical, and socially just inclusion strategies across organisations, communities, and public systems.
4. Interpret contemporary debates and policies related to gender rights, inclusion, and social justice.

THEORY
(CREDITS 3, HOURS 45)

Unit I: Foundations of Gender, Diversity & Inclusion **12 hours**

This unit builds the foundational concepts and theoretical lenses used to understand gender, diversity, and inclusion.

• Conceptual distinctions: sex, gender, gender identity, diversity, inclusion
• Feminist theories: liberal, Marxist, radical, Dalit feminist thought
• Intersectionality and social location

• Socialisation, identity formation, and stereotyping
• Power, privilege, and systemic discrimination
• Historical evolution of gender justice movements (India & global)

Unit II: Gender, Diversity & Social Institutions. 13 Hours
This unit examines how social institutions shape, reinforce, or challenge inequality. Students learn to analyse structural dynamics across everyday and formal systems.

• Family, kinship, caste, religion and gender norms
• Education systems: curriculum bias, access, representation
• Labour and economy: occupational segregation, wage gaps, care economy
• Media and digital spaces: representation, body politics, stereotyping
• State institutions and governance: gender-responsive policies
• Social protection systems and exclusion

Unit III: Diversity, Inclusion & Organisations 10 hours
This unit deepens understanding of legal frameworks, and global benchmarks. It emphasises practical approaches for workplace equity.

• Concepts of diversity management and inclusive leadership
• Organisational culture and gender mainstreaming
• Tools: gender audits, climate assessments, inclusion checklists
• Legal frameworks: POSH Act 2013, equal opportunity policies
• Inclusive HR systems: recruitment, retention, career progression
• DEI in corporate, public, and development sectors

Unit IV: Creating Gender-Inclusive Environments – Policies, Practices & Social Change10Hours
This unit guides students to envision, design, and advocate for inclusive practices in organisations, communities, and public life. Focus is on real-world strategies and change-oriented thinking.

• Gender-inclusive organisational cultures
• GDI audits and measures for organisations- Global and National trends
• Building safe, accessible, gender-sensitive spaces
• Gender-responsive public policies (education, health, transport, urban design)
• Role of civil society, movements, and digital activism
• Community-engaged approaches for inclusion
• Case studies: gender-transformative programmes in India and globally

TUTORIAL
(Credits 1, Hours 15)

- Feminist text discussions (hooks, Menon, Rege, Crenshaw)
- Documentary screenings and analysis
- Debates on body politics, masculinity, rights
- Accessibility and safety walk-throughs on campus
- Discussions with activists, NGOs, or community representatives
- Policy review of gender laws and inclusive rights frameworks

Essential Readings

UNIT-1

- Borah, P. (2022). *Gender in Contemporary India: Issues and Debates*. Sage.
  Butler, J. (2016). *Gender Trouble* (Anniversary ed.). Routledge.

UNIT-II

- Crenshaw, K. (2017). *On Intersectionality: Essential Writings*. The New Press.
- Connell, R. (2020). *Gender in World Perspective* (4th ed.). Polity.
- Gopal, M. (2019). *Intersections: Gender, Caste, and Class in India*. Zubaan.

UNIT-III

- Hooks, B. (2015). *Feminism Is for Everybody*.
- Routledge.Kumar, N. (2021). *Gender and Society in India*. Routledge.

UNIT-IV

- Shaw, J., & Lee, J. (2021). *Women's Voices, Feminist Visions* (8th ed.). McGraw-Hill.
  UN Women. (2023). *Progress of the World's Women Report*.

Suggested Readings

- Gopal, M. (2019). *Intersections: Gender, Caste, and Class in India*. Zubaan.
- Bhasin, K. (2018). *What Is Patriarchy?* Women Unlimited.
- Dhar, R. (2023). *Gendering Governance in India*. Orient BlackSwan.
- Mor Barak, M. (2022). *Managing Diversity*. Sage.
- Sen, A. (2021). *The Argumentative Indian*. Penguin.Dhar, R. (2023). *Gendering Governance in India*. Orient BlackSwan.

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

DISCIPLINE SPECIFIC CORE COURSE

SOCIAL AND BEHAVIOUR CHANGE: THEORY & PRACTICE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Social and Behaviour Change: Theory & Practice	**4**	**2**	**0**	**2**	**As per admission requirements**	**Should be aware of concept of Communication for Development and Behaviour Change**

Learning Objectives

- To develop an understanding of correlations between Human Behavior and Social and Behaviour Change
- To appraise the diverse theories and models related to Social and Behavior Change.
- To design Social and Behavior Change strategies that tackle a range of social and development issues.

Learning Outcomes

The students would be able to:

- Co-relate Human behaviour and Social and Behaviour Change.
- Gain knowledge and proficiency in applying SBC concepts by appreciating the diverse theories and models related to Social and Behavior Change.
- Develop a SBC intervention tool kit for any social/development related issue.

THEORY

(Credits 2; Hours 30)

UNIT I: Human Behavior: An Insight **8 Hours**

This unit underpins on the correlation between the multi-faceted and multi-layered nature of human behaviour.

- Human Behavior and its multi-faced nature

- Perception, Persuasion and Thinking
- Attitude: Definition, formation, Mapping attitudes: models and theories
- Heuristics and Biases

UNIT II: Foundations of SBC **8 Hours**

This unit describes the concept, process and paradigm shifts in Social and Behavior Change.

- Social and Behaviour Change: Concept & Relevance
- Difference between IEC, BCC, SBCC and SBC
- Process of SBC
- Paradigm shifts in SBC: scope and relevance.
- Need and Relevance of SBC Strategies

UNIT III: Social and Behaviour Change: Theories & Models **8 Hours**

This unit explores the continuum of various SBC theories, models and its applications.

- Key concepts in SBC Theory: Individual and Social, Control, Threat, Risk, Reflection, Deliberation and Technologies & Innovation.
- Participatory theories and EE theories, Bullet Behavioural Theory
- Theories of Individual Behaviour Change: Theory of Planned Behaviour and Theory of Reasoned Action, Socio-ecological model, Health Belief Model, Stages of Change theory, Transtheoretical Model
- Nudges for behavior change
- Theories of Behavioural Economics: Decision Theory, Prospect Theory, Nudge Theory, Behavioural Game Theory, Evolutionary Psychology and others.

UNIT IV: Social and Behaviour Change: Applications **6 Hours**

This unit explores the areas and potential of SBC applications.

- Applications of Behavioural economics and Social and Behavioural Change
- Application of SBC theories in strategizing communication for change: Design of communication strategies and messages
- SBC in addressing various issues such as health, environmental, and social justice

PRACTICAL

(Credits 2; Hours 60)

- Personality and Human Behaviour: Assessment and relevance
- Perception, Learning and Thinking: How perception makes a difference in understanding and interpreting communication messages
- Attitude measurement and relevance
- Approaches to SBC: Identifying what works and what does not
- SBC campaigns- elements,
- SBC campaigns- tools and techniques
- Critical Analysis of SBC Campaigns and strategies
- Analysis of campaign’s theory of change messages using behavioural theories
- Monitoring and Evaluation (M&E): Importance of M&E in SBC programs, Key indicators for assessing impact, Tools and techniques for tracking progress and refining strategies

Essential Readings

UNIT- I

- Bargh, J. A. (2017). *Before you know it: The unconscious reasons we do what we do*. New York, NY: Touchstone.
- Fiske, S. T., & Taylor, S. E. (2017). *Social cognition: From brains to culture* (3rd ed.). London, UK: Sage Publications.
- Stanovich, K. E., West, R. F., & Toplak, M. E. (2016). *The rationality quotient: Toward a test of rational thinking*. Cambridge, MA: MIT Press.

UNIT- II

- Fishbein, M., & Ajzen, I. (2015). *Predicting and changing behavior: The reasoned action approach*. New York, NY: Psychology Press.
- Manyozo, L. (2017). *Media, communication and development: Three approaches*. New Delhi, India: Sage Publications.
- UNICEF. (2019). *Communication for development (C4D): Social and behavior change*. New York, NY: UNICEF.

UNIT- III

- Ajzen, I. (2020). *Attitudes and persuasion*. Cambridge, UK: Cambridge University Press.
- Michie, S., Atkins, L., & West, R. (2016). *The behaviour change wheel: A guide to designing interventions*. London, UK: Silverback Publishing.
- Singhal, A., Cody, M. J., Rogers, E. M., & Sabido, M. (Eds.). (2015). *Entertainment-education and social change: History, research, and practice*. New York, NY: Routledge.

UNIT- IV

- Datta, S., & Mullainathan, S. (2017). Behavioral science and policy design. *Harvard Business Review*, 95(6), 44–53.
- Dolan, P., Hallsworth, M., Halpern, D., King, D., & Vlaev, I. (2015). Mindspace: Influencing behaviour through public policy. *Journal of Economic Psychology*, 45, 3–17. https://doi.org/10.1016/j.joep.2014.11.002

Recommended Readings

- Agrawal, P.K., K. Aruldas & M.E Khan,. 2014. *Training Manual on Basic Monitoring and Evaluation of Social and Behavior Change Communication Health Programs*. New Delhi: Population Council.
- *Communication for social change: Context, social movements and the digital era* (2025). SAGE India.
- *Public health communication message design* (2025). SAGE India.
- Vaijappa, G., & Das, A. (Eds.). (2022). *Communication and social development perspective in India*. Mysore Book House

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

Project Management & Grant Writing

CREDIT DISTRIBUTION,ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Project Management & Grant Writing	**4**	**3**	**-**	**1**	**As per admission requirements**	

Learning Objectives

1. To develop conceptual understanding and practical knowledge of project cycle management.
2. To equip learners with knowledge about sources for financing developent projects and skills to design, manage, and monitor development projects effectively.
3. To train students in writing persuasive, evidence-based project proposals and grant applications tailored to donor requirements.

Learning Outcomes

The students will be able to:

- Explain key principles, frameworks, and stages of project management.
- Apply project management tools for effective planning, budgeting, implementation, and evaluation.
- Prepare a complete project proposal including logical framework, budget, and monitoring plan.
- Demonstrate skills in identifying funding agencies and writing competitive grant applications.
- Critically assess project sustainability, stakeholder engagement, and ethical dimensions of project implementation.

THEORY
(Credits 3, Hours 45)

Unit I: Introduction to Project Management 10 Hours

This unit provides an overview of the concepts, life cycle, and frameworks in project management, emphasizing planning, feasibility, and alignment with organizational goals.

- Meaning, scope, and importance of project management in development and research contexts
- Project life cycle: initiation, planning, execution, monitoring, and closure
- Project Management Methodologies: Traditional (Waterfall) and modern (Agile, Scrum) approaches

- Project planning: Project charter, feasibility studies, and project selection models. Stakeholder identification and needs assessment
- Logical Framework Approach (LFA) and Theory of Change (ToC) as planning tools

Unit II: Project Design and Implementation 10 hours

This unit focuses on designing projects through frameworks, work plans, and budgets, and explores effective implementation and leadership approaches.

- Steps in project design and formulation
- Setting goals, objectives, outputs, outcomes, and indicators
- Developing work breakdown structures (WBS)
- Risk assessment and mitigation strategies
- Project Budgeting & Scheduling: types of costs, cost estimating, budget heads, justification, cost–benefit analysis, Time management of projects
- Quality control and Performance management
- Leadership & Team Building: Leading and managing project teams, conflict resolution, and negotiation.
- Organizational structures and Culture & Project management
- Gender, Diversity, inclusion, and sustainability perspectives in project design

Unit III: Development Finance 15 Hours

This unit focuses on identifying financing opportunities, aligning ideas with financial stakeholders priorities.

- Understanding Development Financing ecosystem: National and international funding agencies
- Mobilizing Capital: Strategies to unlock investment from public, private, domestic, and international sources for sustainable development goals (SDGs).
- Microfinance and digital finance (Fintech) in expanding financial access for households & development
- Development Finance Institutions (DFIs): The function, business models, and operational methods of DFIs and multilateral development banks (MDBs).
- Sustainable and Climate Finance: Integrating climate action and ESG (Environmental, Social, and Governance) considerations into financing mandates and using instruments like blended finance, Green bonds etc
- Social Impact Investing
- Identifying funding opportunities & calls for proposals: Funding databases, donor mapping, and eligibility assessment

Unit IV: Grant Writing Funding Management, and Reporting 10 Hours

This unit focuses on developing a proposal and post-award project management including grant compliance, tracking progress, financial accountability, and donor reporting.

- Developing a compelling concept note: Framing problem statements, goals, and rationale based on evidence
- Structuring winning proposal.
- Budget preparation: Cost estimation, justification, and linking budgets to outcomes
- Persuasive writing skills: Tone, clarity, logic, and storytelling in proposal writing
- Grant management cycle: Pre-award, post-award, and close-out stages

- Understanding grant agreements and compliance: Roles, deliverables, reporting timelines, and fund utilization norms
- Preparing technical and financial reports.
- Donor Communications & relations: Communicating with funders, building credibility, and maintaining transparency, sharing learnings, outcomes, and future engagement with donors & stakeholders

PRACTICAL
(Credits 1, Hours 30)

- Development finance agencies case studies
- Tools for situation and problem analysis: SWOT, problem tree, needs mapping
- Tools: Gantt charts, results framework, outcome mapping, and KPI tracking
- Preparing technical and financial reports for donors
- Grant Scoping Exercises: Students identify 3 relevant funding agencies for their project area and summarize eligibility, focus areas, and deadlines.
- Develop a Project Proposal for a Development issue: Draft a 1-page concept note for a development project.
- Peer-assess proposals using actual donor evaluation criteria.
- Create a sample project budget linking costs with outcomes.

Essential Readings

UNIT- I

- United Nations Development Programme. (2020). *Handbook on planning, monitoring and evaluating for development results*. UNDP.
- Bakewell, O., & Garbutt, A. (2015). The use and abuse of the logical framework approach. *Third World Quarterly, 26*(6), 915–932.

UNIT- II

- Kettner, P. M., Moroney, R. M., & Martin, L. L. (2016). *Designing and managing programs: An effectiveness-based approach* (5th ed.). SAGE Publications.
- Desai, V. (2022). *Project management and social development: Principles and practice*. SAGE Publications India.

UNIT- III

- Rao, P. K. (2018). *Development finance* (2nd ed.). Springer.
- Ghosh, J. (2019). Development finance and inclusive growth in India. *Economic and Political Weekly, 54*(17), 36–43.
- United Nations. (2020). *Financing for sustainable development report*. United Nations Department of Economic and Social Affairs.

UNIT-IV

- Khanna, R., & Kapoor, S. (2021). *Grant writing and fundraising for Indian NGOs: A practical guide*. Routledge India.
- Ebrahim, A. (2019). Measuring social change: Performance and accountability in complex worlds. *Stanford Social Innovation Review, 17*(2), 28–35.

- Government of India. (2020). *General Financial Rules (GFR), 2017 (Updated edition)*. Ministry of Finance.

Suggested Readings

- Bryson, J. M. (2018). *Strategic planning for public and nonprofit organizations.* Jossey-Bass.
- Chambers, R. (2017). *Whose reality counts? Putting the first last.* Intermediate Technology Publications.
- Gido, J., & Clements, J. P. (2018). *Successful project management* (7th ed.). Cengage Learning.
- Kothari, C. R., & Garg, G. (2022). *Research methodology: Methods and techniques* (5th ed.). New Age International.
- Joshi, S. (2023). *Resource Mobilization and Proposal Writing for Development Professionals*. New Delhi: Rawat Publications.
- The World Bank. (2021). *Project cycle management guidelines.*

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
PEACE, HUMAN RIGHTS AND HUMANITARIAN ACTION

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Peace, Human Rights and Humanitarian Action	4	3	1	0	As per admission requirements	

Learning Objectives:

- To understand the foundational concepts of peace, conflict, and violence and their interlinkages with development and human rights.
- To analyse the evolution, legal frameworks, and key debates in the field of human rights.
- To examine the principles, legal instruments, and operational challenges of humanitarian action.
- To develop skills in applying communication strategies for peacebuilding, human rights advocacy, and ethical humanitarian reporting.
-

Learning Outcomes:

The students would be able to:

- Differentiate between key concepts such as negative/positive peace and direct/structural violence, and apply relevant theories.
- Critically evaluate the international human rights and humanitarian legal architecture and its functioning.
- Analyse the roles, responsibilities, and dilemmas of various actors in the humanitarian ecosystem.
- Design context-appropriate and ethical communication strategies for conflict resolution, rights advocacy, and social cohesion.

THEORY
(Credits 3; Hours 45)

UNIT I: Conceptual Foundations: Peace, Conflict, and Violence 12 Hours

This unit introduces the interlocking frameworks of peace, rights, and humanitarianism. It explores the meanings of peace and conflict, the dimensions of violence, and the major theoretical approaches that inform this field.

- Conceptual Foundations: The Interlocking Frameworks of Peace, Rights, Humanitarianism, and Development.
- Understanding Peace: Negative vs. Positive Peace; Peace-keeping, Peace-making, and Peace-building.

- Conflict: Sources, Types, and Implications.
- Violence and its Dimensions: Direct, Structural, and Cultural Violence, Everyday Violence.
- Theories and Approaches: Realist, Liberal, and Critical Theories (Gandhian, Feminist).
- Indian Context: Conflict and peace process (communal conflict, caste violence, gender violence, resistance movements).

UNIT II: Human Rights: Evolution, Frameworks, and Violations 11 Hours

This unit delves into the evolution, significance, and core debates surrounding human rights. It examines the key legal instruments and analyses contemporary human rights issues, with a specific focus on India.

- Understanding Human Rights: Significance, History, and Generations of Rights.
- Key Debates: Universality vs. Cultural Relativism; The Capabilities Approach (Sen, Nussbaum).
- Core Legal Instruments: The Universal Declaration of Human Rights (UDHR), International Covenants (ICCPR, ICESCR), Human Rights in the Indian Constitution.
- Human Rights Violations in Conflict Zones.
- Issues of Human Rights in India: Dalit and Adivasi Groups, Women and Children in Armed Conflict Zones, Human Rights and Climate Change.

UNIT III: Humanitarian Action: Principles, Law, and Praxis 11 Hours

This unit focuses on the system of humanitarian action, its guiding principles, and legal foundations. It critically examines the roles of international and national actors, coordination mechanisms, and operational challenges.

- Humanitarianism: Core Principles (Humanity, Impartiality, Neutrality, Independence).
- International Humanitarian Law (IHL): Geneva Conventions and their Additional Protocols.
- International Refugee Law: The 1951 Refugee Convention and its application in South Asia.
- Key Institutions & Coordination: UN Agencies (OCHA, UNHCR), Red Cross/Crescent Movement, NGOs (International and national), and the Cluster System.
- Accountability Frameworks: International Criminal Court (ICC), Responsibility to Protect (R2P).
- Critiques and Challenges: The "Humanitarian Imperative," Decolonial Perspectives, and Operational Dilemmas.
- Understanding Humanitarian aids and actions in Indian context

UNIT IV: Communication for Peace, Human Rights and Humanitarian Action 11 Hours

This unit explores the central role of communication in these fields, focusing on strategic, ethical, and practical applications in media, advocacy, and community engagement.

- Dialogue and Negotiation
- Media, Conflict & Peace: War Journalism vs. Peace Journalism; Countering Hate Speech and Misinformation.
- Humanitarian Communication & Ethics: The Politics of Imagery; critiques of "poverty porn" and ethical storytelling.
- Communication for Social Cohesion & Rights: Using SBCC for Peacebuilding; Participatory Communication (Community Radio, Participatory Video).
- Human Rights Advocacy & Campaigning: Developing a Communication Strategy, Stakeholder Mapping, and Crafting Policy Briefs.

Tutorial
(Credit 1; Hours 15)

- Analyse and compare media coverage of a conflict, identifying frames of War Journalism vs. Peace Journalism.
- Develop a stakeholder map and a one-page policy brief for a chosen human rights issue in India.
- Critically analyse the visual rhetoric and narrative of a humanitarian fundraising campaign.
- Design a concept note for a participatory communication project (e.g., using community radio) to address a local conflict or rights violation.
- Simulate the development of a core message and communication channel strategy for a humanitarian cluster responding to a disaster.

Essential Readings:

UNIT- I

- Galtung, J. (2015). *Peace by peaceful means: Peace and conflict, development and civilization* (Updated ed.). SAGE Publications.
- Chatterjee, P. (2018). *The politics of the governed: Reflections on popular politics in most of the world*. Columbia University Press.
- Rege, S. (2019). *Caste, violence, and democracy*. Oxford University Press India.

UNIT- II

- Nussbaum, M. C. (2016). *Creating capabilities: The human development approach*. Harvard University Press.
- Baxi, U. (2018). *Human rights in a posthuman world: Critical essays*. Oxford University Press India.
- Kothari, S. (2017). Human rights movements and the Indian state. *Journal of Human Rights Practice, 9*(2), 289–304.

UNIT- III

- Banerjee, D., & Duflo, E. (2019). Humanitarian crises, displacement, and development responses. *World Development, 117*, 1–12.
- Chaudhuri, S. (2020). India's humanitarian response to disasters: Institutions and challenges. *Indian Journal of Public Administration, 66*(2), 213–229.
- UNOCHA. (2021). *Humanitarian principles and coordination mechanisms*. United Nations Office for the Coordination of Humanitarian Affairs.

UNIT- IV

- Thomas, P. N. (2017). *Communication and human rights*. SAGE Publications India.
- UNESCO. (2020). *Journalism, fake news & disinformation: Handbook for journalism education and training*. UNESCO Publishing.

Suggested Readings:

- Gupta, N. (Ed.). (2021). *Social justice and human rights in India*. IBP Books *Human rights and Indian literary communities* (Ed.). (2026). Routledge.
- Richmond, O. P., & Pogodda, S. (Eds.). (2024). *Peacebuilding: A very short introduction* (Vol. 2). Oxford University Press.

DISCIPLINE SPECIFIC ELECTIVE COURSE

TRAINING AND CAPACITY BUILDING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Training and Capacity Building	**4**	**2**	**0**	**2**	**As per admission requirements**	**Should be aware of the concept and significance for training for development**

Learning Objectives

1. To familiarize with the concept and significance of training for development.
2. To understand the training process and the functions of different phases of training.
3. To know how different training approaches can be used to achieve various development goals.
   - To impart knowledge and skills for conducting effective training to deal with development challenges.

Learning Outcomes

The students would be able to:

- Assess the importance and scope of training for development.
- Learn the functions of different phases of the training process.
- Conceptualize and implement need-based training programs for different stakeholders to build knowledge, attitudes and skills
- Critically evaluate the different training strategies and their role in promoting development.

THEORY

(Credits 2; Hours 30)

UNIT I: Training for Development: Concept **8 Hours**

This unit explores the significance of training and capacity-building initiatives in fostering professional growth, organizational effectiveness, and societal development.

- Importance and Scope of Training for Development- National and Global Perspectives
- Government policies, programs, and institutions for training and capacity building for development initiatives

- Types, Approaches, Models, Theories, and Methods of training for bridging the gaps in knowledge, attitudes, and skills
- Principles of adult learning, Learning theories, and models
- Training and capacity building needs of various client groups- communities; field level, midlevel, and other functionaries of development agencies, corporates and others

UNIT II: Training Tools **6 Hours**

This unit covers various training methodologies emerging innovations in the field of training and development. It also lays emphasis on Training Tools and Strategies

- Training methods– types, purpose, advantages, limitations, applications, and adaptations
- Participatory methods (lecture, demonstration, role play, case study, games, simulations, use of audio-visual aids, and technology-based methods)

Unit III: Being an Effective Trainer **6 Hours**

This unit throws light on self-development of a trainer, his/her key roles a competency.

- Self-development of a trainer
- Roles and competencies of an effective trainer
- Mobilizing and working with small groups for training- communication, leadership, group dynamics, conflict resolution, team building
- Training needs assessment of individuals and organizations- techniques and their application

UNIT IV: Designing, Executing, and Evaluating Training Modules **10 Hours**

- Analysis of training programs for different stakeholders
- Designing and conducting training programmes for development- objectives, learning outcomes, contents, methods, materials & resources, feedback, evaluation, and budget
- Tools and techniques for training needs assessment: Surveys, Interviews, Focus Group Discussions and Skill Gap Analysis
- Understanding various learning goals and outcomes for specific target groups
- Development of Training modules and materials: manuals, presentations, case studies, and e-learning resources
- Implementation of training programmes: Time management, resource allocation, and participant engagement strategies
- Importance and Methods of evaluation, follow-up, and impact assessment of training: Methods, Models, tools and techniques, and innovations

PRACTICAL
(Credits 2; Hours 60)

- Self-development exercises for trainers
- Exercises in Team building
- Exercises on Leadership development
- Practice of participatory training tools and techniques: on-site
- Practice of participatory training tools and techniques: online using digital technology and AI tools
- Conduct a training needs analysis for an organization
- Plan and Design a training program
- Conduct a training program
- Critical Evaluation of Prior Training Programs

- Designing and Conducting a ToT for different stakeholders
- Development of Training IEC

Essential Readings

UNIT- II

- Noe, R. (2017). Employee training & development (7th ed.). New York, NY: McGraw-Hill Education. ISBN: 978-0-07-811285-0.
- Silberman, M. (Mel). (2015). Active training: A handbook of techniques, designs, case examples, and tips. (any edition). San Francisco, CA: Pfeiffer. ISBN: 9781118972014.

UNIT- II

- Noe, R. A. (2017). *Employee training and development* (7th ed.). New York, NY: McGraw-Hill Education.
  (Training methods, participatory tools, technology-based learning)
- Salas, E., Tannenbaum, S. I., Kraiger, K., & Smith-Jentsch, K. A. (2015). The science of training and development in organizations. *Psychological Science in the Public Interest*, 13(2), 74–101. https://doi.org/10.1177/1529100612436661

UNIT- III

- Knowles, M. S., Holton, E. F., & Swanson, R. A. (2015). *The adult learner: The definitive classic in adult education and human resource development* (8th ed.). London, UK: Routledge.
  (Adult learning, trainer roles, competencies, self-development)
- Northouse, P. G. (2018). *Leadership: Theory and practice* (8th ed.). Thousand Oaks, CA: Sage Publications.
  (Group dynamics, leadership, communication, and team building for trainers)

UNIT- IV

- Kirkpatrick, D. L., & Kirkpatrick, J. D. (2016). *Evaluating training programs: The four levels* (4th ed.). Oakland, CA: Berrett-Koehler.
  (Evaluation, impact assessment, and follow-up)
- Goldstein, I. L., & Ford, J. K. (2015). *Training in organizations: Needs assessment, development, and evaluation* (4th ed.). Belmont, CA: Cengage Learning.
  (Training needs assessment, module design, implementation, and evaluation)

Suggested Readings

- Preskill, H., & Russ-Eft, D. (2016). *Building evaluation capacity: Activities for teaching and training* (2nd ed.). SAGE Publications.
- Mohanty, B. P., Sinha, A., Phand, S., Das, S., & Basade, Y. (Eds.). (2024). *Capacity building in fisheries and aquaculture*. NIPA.
- *Emerging pedagogies for policy education: Insights from Asia*. (2024). Springer/Academic Press.
- *Building sustainable leadership capacity*. (2025). SAGE India.
- *Creating instructional capacity*. (2025). SAGE India.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

ESG, SUSTAINABILITY REPORTING AND SOCIAL IMPACT

CREDIT DISTRIBUTION,ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
ESG, Sustainability Reporting and Social Impact	**4**	**3**	**-**	**1**	**As per admission requirements**	

Learning Objectives

1. To develop a comprehensive understanding of ESG principles, frameworks, and standards and their implications for corporate and development sectors.
2. To analyse sustainability reporting mechanisms, disclosure practices, and evaluation metrics in national and international contexts.
3. To assess social impact, ethical governance, and sustainable value creation through case-based and analytical approaches.

Learning Outcomes

The students will be able to:

1. Explain the evolution and components of ESG and sustainability frameworks.
2. Critically analyse sustainability and CSR reports across sectors.
3. Apply ESG metrics to evaluate organizational performance.
4. Conduct social impact assessments and interpret sustainability data.
5. Recommend strategies for inclusive and transparent ESG reporting aligned with global best practices.

THEORY
(Credits 3, Hours 45)

Unit I: ESG Foundations and Evolution 10 Hours

This unit introduces the origins, philosophy, and evolution of ESG and sustainability in the corporate and development sectors.

- Emergence of ESG: Historical evolution and global milestones
- Principles of ESG: Environmental stewardship, social responsibility, governance ethics
- Relationship between ESG, CSR, and Sustainable Development Goals (SDGs)
- ESG in the Indian context: SEBI regulations, BRSR (Business Responsibility and Sustainability Report)
- Role of ESG in corporate reputation, investment, and risk management
- Institutional and policy drivers: UN Global Compact, PRI, GRI

Unit II: Sustainability Reporting and Disclosure Frameworks 13 Hours

This unit focuses on global and national sustainability reporting frameworks, emphasizing transparency, accountability, and disclosure standards.

- Sustainability reporting: Purpose, process, and principles
- Overview of GRI Standards, SASB, TCFD, and Integrated Reporting frameworks
- Business Responsibility and Sustainability Reporting (BRSR) – SEBI guidelines (2021 onwards)
- ESG disclosures in Indian companies
- Data metrics and indicators for ESG performance
- Assurance, verification, and third-party validation of ESG reports

Unit III: Social Impact Assessment and Measurement 12 Hours

This unit emphasizes tools and methodologies for assessing social and environmental impacts of programmes, businesses, and policies.

- Understanding social impact: definitions and frameworks
- Theories of change and logic models for impact measurement
- Social Return on Investment (SROI), cost-benefit analysis, and qualitative indicators
- Impact measurement in CSR, NGO, and corporate programmes
- Role of technology, AI, and big data in sustainability analytics
- SDGs and ESG disclosures

Unit IV: Social Impact Assessment, Measurement, and Future of ESG 10 Hours

This unit emphasizes social and environmental impact measurement, while exploring future ESG trends, challenges, and technological innovations.

- Understanding and measuring social impact – theories and frameworks
- Tools for social impact analysis
- Linking impact assessment with ESG goals and SDGs
- Technology and AI in ESG data management and impact measurement
- Ethical governance, greenwashing, and accountability issues in ESG reporting
- Future trends: green finance, carbon accounting, ESG investing, and global sustainability innovations

PRACTICAL
(Credits 1, Hours 30)

- Mapping evolution of ESG standards through a timeline
- Analysing BRSR framework for an Indian corporate companies
- Understanding ESG vs CSR
- Comparative analysis of two sustainability reports (one Indian, one international)
- Evaluation of ESG disclosure compliance
- Case study analysis: Social Impact Assessment (SIA) of a CSR project
- Developing an ESG strategy framework for a hypothetical company
- ESG-driven business innovation

Essential Readings

UNIT- I

- Bhattacharya, C. B., Korschun, D., & Sen, S. (2021). *Leveraging corporate responsibility: The stakeholder route to maximizing business and social value*. Cambridge University Press.
- Desai, V. (2022). *Sustainability, corporate governance, and responsibility in India*. SAGE Publications India.

UNIT- II

- Securities and Exchange Board of India. (2021). *BRSR core and assurance requirements*. SEBI.
- OECD. (2022). *ESG investing and sustainability disclosure frameworks: Global perspectives*. OECD Publishing.
- Institute of Chartered Accountants of India. (2020). *Integrated reporting framework and sustainability disclosures in India*. ICAI.

UNIT- III

- Desai, V., & Potter, R. B. (2018). *The companion to development studies* (3rd ed.). Routledge India.
- Nicholls, J., Lawlor, E., Neitzert, E., & Goodspeed, T. (2015). *A guide to social return on investment*. Social Value UK.
- Bandyopadhyay, S. (2021). Technology-driven impact measurement in Indian development programmes. *Economic and Political Weekly, 56*(23), 52–59.

UNIT- IV

- World Economic Forum. (2022). *Measuring stakeholder capitalism: Towards common ESG metrics*. WEF.
- SEBI. (2023). *BRSR core: ESG assurance and disclosure requirements*. Securities and Exchange Board of India.

Suggested Readings

- Singh, R., & Mishra, S. (2023). *Corporate Sustainability and Social Responsibility in India: Policy, Practice, and Performance*. New Delhi: Rawat Publications.
- Elkington, J. (2018). *The Triple Bottom Line: Does It All Add Up?* Routledge.
- Kumar, R., & Sharma, P. (2022). *Sustainability Reporting: A Practitioner's Guide for Indian Corporates*. New Delhi: PHI Learning.
- UNDP. (2020). *Impact Measurement and Management for the SDGs*. United Nations Development Programme.
- KPMG. (2023). *Sustainability Reporting Survey 2023*. KPMG International.
- Singh, P. (2021). *Environmental, Social and Governance (ESG): The Indian Context*. New Delhi: Excel Books.

DISCIPLINE SPECIFIC ELECTIVE COURSE

LIFELONG LEARNING AND LIFE SKILLS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Lifelong Learning and Life Skills	**4**	**3**	**1**	**0**	**As per admission requirements**	

Learning Objectives

- To Understand key concepts, historical evolution, and terminology related to adult and lifelong learning in India and globally.
- To analyze national and international programmes and policies that shape lifelong learning, including the role of NGOs, industries, and global declarations.
- To examine life skills development among adolescents and youth, including skill acquisition processes, training principles, and learning techniques.
- To develop competencies to design, implement, and evaluate lifelong learning programmes, including needs assessment, training methods, and use of technology.

Learning Outcomes

The students would be able to:

- Explain major concepts, historical developments, and educational structures shaping lifelong and adult learning in India and internationally.
- Evaluate policy frameworks, programmes, and institutional roles in promoting lifelong learning at national and global levels.
- Apply principles of life skills training to design learning interventions for adolescents and youth using varied pedagogical approaches.
- Design and operationalize lifelong learning programmes through competency identification, training design, and technology-enabled learning tools.

THEORY

(Credits 3; Hours 45)

UNIT I: Foundations of Adult and Lifelong Learning — 10 Hours

This unit introduces the historical development of adult and lifelong learning in India, key concepts such as andragogy, pedagogy, and lifelong learning, and various forms of education. It also examines early national programmes that laid the foundation for literacy and continuing education.

- Historical perspective of Adult and Lifelong Learning in India – Pre- and Post-Independence
- Concepts and terminologies: Andragogy & Pedagogy, Lifelong Learning, Continuing Education
- Types of education: Formal, Non-Formal, Incidental Learning; Illiteracy and its forms
- Indian Adult / Lifelong Learning Programmes: Social Education, Gram Shiksha Mohim, Farmer's Functional Literacy Programme

UNIT II: National Lifelong Learning Policies and Programs 10 Hours

This unit explores India's major policies, national missions, and Five-Year Plan approaches to lifelong learning. It focuses on the developmental role of lifelong education and highlights emerging national needs and future directions.

- National Adult Education Programme and National Literacy Mission
- Approaches to Continuing Education / Lifelong Learning in different Five-Year Plans
- Lifelong Learning and Development: Social, Economic, Political and Cultural dimensions
- Emerging needs and future perspectives of Lifelong Learning

UNIT III: International and Sectoral Perspectives on Lifelong Learning 15 Hours

This unit provides global and sectoral perspectives, emphasizing international declarations, NGO roles, industry learning needs, and regional trends across Asia and SAARC. It also reviews major national and international frameworks shaping lifelong learning.

- Lifelong Learning needs of industries; Role of NGOs and Zilla Saksharta Samitis
- UNESCO Declaration on Adult and Lifelong Learning; Hamburg Declaration (1997)
- Mumbai Declaration on Role of Higher Education; Bharat GyanVigyan Jatha and Literacy House
- Trends in Adult & Lifelong Learning in Asia with focus on SAARC; National initiatives like Saakshar Bharat and international frameworks

UNIT IV: Adolescents, Youth and Life Skills Education 10 Hours

This unit examines the nature and types of life skills, processes of skill acquisition, and methods for life skills training. It highlights individual, family, institutional, and community approaches to strengthening youth competencies for personal and social development.

- Life skills: nature, classification and measurement
- Individual skills for self-identity
- Traditional family-based and institution-based skills acquisition processes
- Participatory and community-based skills acquisition processes; Principles of life skills training, learning aids, and training techniques

TUTORIAL
(Credits 1; Hours 15)

- Field Visit to an Adult Education Centre: Observe teaching methods, learner profiles, and programme structures in real settings.
- Case Study Analysis of National Literacy Mission: Review achievements, challenges, and innovations through structured analysis.
- Survey on Lifelong Learning Awareness: Conduct a small survey among adults to assess motivations, barriers, and learning needs.
- Mapping Local NGOs Working in Lifelong Learning: Prepare a brief report on their role, activities, and community reach.
- Document Review of UNESCO and Hamburg Declarations: Summarize key principles and implications for India in a practical worksheet.
- Industry Skill-Needs Assessment (Mini Exercise): Interview an HR professional or use secondary data to identify emerging skill demands.

- Design a Micro Training Module: Prepare a simple module for adult learners on topics such as digital literacy or financial literacy.
- Life Skills Training Activity for Youth: Conduct a role-play, group discussion, or problem-solving session based on one life skill (e.g., decision-making, communication).
- Participatory Rural Appraisal (PRA) Simulation: Practice community-based tools such as social mapping or seasonal calendars to identify learning needs.

Essential Readings:

UNIT- I

- Government of India. (2018). *Adult education and lifelong learning in India: Policy perspectives*. Ministry of Education.
- Indira Gandhi National Open University. (2022). *Lifelong learning: Issues and concerns* (Block-4). eGyanKosh.
- Jarvis, P. (2018). *Adult education and lifelong learning: Theory and practice* (4th ed.). Routledge.

UNIT- II

- Government of India. (2020). *New Education Policy 2020*. Ministry of Human Resource Development.
- National Institute of Adult Education. (2019). *Continuing education and lifelong learning in India*. NIAE.

UNIT- III

- UNESCO Institute for Lifelong Learning. (2015). *Rethinking lifelong learning for sustainable development*. UNESCO.
- UNESCO. (2016). *Education 2030: Incheon declaration and framework for action*. UNESCO Publishing.

UNIT- IV

- UNICEF India. (2019). *Life skills education framework for adolescents and youth*. UNICEF India.
- World Health Organization. (2020). *Life skills education for health promotion*. WHO.
- NCERT. (2021). *Adolescent education programme: Life skills modules*. National Council of Educational Research and Training.

Suggested Readings:

- AuthorLastName, F. (2024). *Lifelong learning for capability*. Springer Nature.
- London, M. (Ed.). (2021). *The Oxford handbook of lifelong learning* (2nd ed.). Oxford University Press.
- Jones, J. E., Baran, M., & Cosgrove, P. L. (Eds.). (2024). *Strategies and digital advances for outcome-based adult learning*.

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

DISCIPLINE SPECIFIC CORE

TECHNIQUES OF RESEARCH WRITING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Techniques of Research Writing	**2**	**2**	**0**	**0**	**As per admission requirements**	**Should be aware of Advanced Research Methodology and Statistical Tools for Research.**

Learning Objectives

- Comprehend and apply principles of academic writing for research
- Understand the concept of plagiarism and adopt strategies to avoid plagiarism.
- Learn and use different citation styles and effectively utilize reference management tools.
- Outline the process of writing, publishing, and presenting research.
- Avoid common errors in academic writing.

Learning Outcomes

After completing the course, students will be able to:

- Structure and organize major scholarly works according to disciplinary standards.
- Master the principles of academic writing and non-plagiaristic expression.
- Employ visualization techniques to effectively communicate complex research findings and data patterns.
- Apply citation styles and formatting requirements meticulously to produce publication-ready manuscripts.

THEORY
(Credits 2; Hours 30)

UNIT I: The Foundations and Structure of a Research Manuscript 18 Hours

This unit covers the essentials of clear, concise, and formal academic writing, ethical practices including plagiarism avoidance, effective idea organization, and responsible use of AI tools in research. This unit also guides students through crafting a complete research manuscript, including

introduction, methodology, results, discussion, and conclusions, with emphasis on accurate data presentation, visualization, and proper manuscript formatting.

- Academic Writing principles and organization of ideas
- Plagiarism types, use of plagiarism-checking software & interpretation of plagiarism reports.
- Academic writing frameworks: IMRAD (Introduction, Methods, Results, Discussions) Structure and the TEEC (Topic sentence, Evidence, Explanation, Conclusion) Structure
- Ethical use of AI in academic writing
- Data Visualization: Principles, Types and Tools

UNIT II: Citation, Reference Management, Publication and Presentation of Research 12 Hours

The unit focuses on mastering citation styles, managing references using software tools, and conducting efficient literature searches using databases and advanced search strategies. The unit further explores journal selection, ethical publishing practices, research paper writing, and the creation and delivery of effective presentations and posters for diverse academic audiences.

- Citation Management & formatting guidelines: Detailed application of specific styles (e.g., APA 7th, MLA, Chicago, Vancouver), managing in-text citations, citation index.
- Reference Management Software (RMS): Zotero, Mendeley and other citation tools; searching specialized databases (e.g., Scopus, Web of Science, ScienceDirect);
- Databases and Search Strategy- Key search terms, Boolean operators, PRISMA diagram
- Types and Selection of Journals: Predatory journals, Cloned journals; Open access and Paid Journals; Impact Factor and other metrics of Journals
- Research Paper writing and publishing in peer-reviewed journals, understanding journal-specific guidelines.
- Formulating and Presenting a Research Poster
- Presentation Skills: Creating effective slides, summarizing complex findings for different audiences, and managing Q&A sessions.

Essential Readings:

UNIT 1

This unit introduces the essential principles of scholarly writing required for academic research. It focuses on developing clarity, precision, and coherence in written work while maintaining an appropriate academic tone. This unit also familiarizes students with accurate citation practices and systematic reference management in academic writing. Further, the unit covers the correct presentation of tables, figures, and overall manuscript formatting in line with journal and institutional requirements. Students will gain practical skills necessary for producing professionally structured research documents.

- American Psychological Association. (2020). *Plagiarism* (7th ed.). APA Style. https://apastyle.apa.org/style-grammar-guidelines/citations/plagiarism

- American Psychological Association. (2020). *Sample tables* (7th ed.). APA Style. https://apastyle.apa.org/style-grammar-guidelines/tables- figures/sample-tables
- American Psychological Association. (2023). *Citing generative AI in APA Style: Part 1—Reference formats*. APA Style Blog. https://apastyle.apa.org/blog/cite-generative-ai-references
- Thomas, C. George (2021) Research Methodology and Scientific Writing (2nd ed.) Springer Nature

UNIT II

This unit focuses on the organization and presentation of a complete research report/document. Students will learn how to write each section of a research manuscript clearly and logically. The unit focusses on the processes involved in publishing and presenting research work. It covers the selection of appropriate journals, awareness of unethical publishing practices, the basics of writing for peer-reviewed publications, effective research presentation skills, including poster preparation and oral presentations

- American Psychological Association. (2020). *Response to reviewers* (7th ed.). APA Style. https://apastyle.apa.org/style-grammar-guidelines/research- publication/response-reviewers
- American Psychological Association. (2020). *Heading levels* (7th ed.). APA Style. https://apastyle.apa.org/style-grammar-guidelines/paper- format/heading-levels
- Hamilton College. (n.d.). *How to write an APA research paper*. https://www.hamilton.edu/academics/centers/writing/writing-resources/how-to-write- an-apa-research-paper
- Montclair State University. (2021). *How to prepare your dissertation in APA Style*. https://www.montclair.edu/graduate/wp-content/uploads/sites/58/2021/01/DISSERTATION-GUIDELINES-FOR-APA- STYLE-1-2021.pdf
- Tullu, M. S., & Karande, S. (2017). *Writing a model research paper: A roadmap*. *Journal of Postgraduate Medicine*, *63*(3), 143–146. https://doi.org/10.4103/jpgm.JPGM_325_17

Suggested Readings:

- AME Publishing Company. (2022). *Discussion and conclusion*. https://cdn.amegroups.cn/journals/vats/files/journals/27/articles/4955/public/4955- PB1-8866-R1.pdf?filename=amj-04-26.pdf
- McLeod, S. (2023). *How to write a methods section for a psychology paper*. Very well Mind. https://www.verywellmind.com/how-to-write-a-method- section-2795726

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

GENERAL ELECTIVE

GE 3: ORGANIZATIONAL COMMUNICATION: TOOLS & TECHNIQUES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
ORGANIZATIONAL COMMUNICATION: TOOLS & TECHNIQUES	4	3	1	0	As per admission requirements	Should be aware of key concepts of communication and organizational communication

Learning Objectives

- To understand the fundamentals and dynamics of organizational communication
- To recognise the communication skills required for a professional life at the work place
- To develop key skills required for effective communication at workplace

Learning Outcomes

The students would be able to:

- Appreciate the fundamentals and dynamics of organizational communication
- Develop and hone key skills required for effective communication at workplace such a presentations, public relations, interpersonal skills etc
- Equip themselves better for organizational communication and foster professional relationships at workplace

THEORY
(Credits 3; Hours 45)

UNIT I: Organizational Communication: Fundamentals & Dynamics 15 Hours

This unit delves on the fundamentals of organizational communication and the changing dynamics at workplace. It focuses on the principles, methods, types, tools and techniques important for workplace communication.

- Workplace communication- Principles and Methods
- Organizational Communication- types, tools , techniques and conflict resolution
- Networks of communication
- Significance of technical communication
- Perception, Persuasion as communication skills
- Barriers to effective communication- Professional Relationships And Group Communication, conflict management

UNIT II: Communication Skills at Workplace 8 hours

This unit covers all the essential communication skills required by a professional at workplace touching upon the 4 quadrants of communication: Reading, Writing, Listening and Speaking.

- Reading Skills: Previewing techniques; Skimming; Scanning; Understanding the gist of an argument; Identifying the topic sentence; Inferring lexical and contextual meaning; recognizing coherence and sequencing of sentences; Improving comprehension skills.
- Listening skills: Process, Types of listening, models of listening
- Writing Skills: Sentence formation; Use of appropriate diction; Paragraph and Essay Writing; Coherence and Cohesion.
- Speaking skills: clear and concise communication, active listening, empathy, non-verbal communication and the ability to adapt to different audiences and situations

UNIT III: Professionalism at Workplace 10 hours

This unit covers all the essentials related to harnessing professionalism at workplace.

- Importance of respect, communication, punctuality accountability, integrity, etiquettes and a positive attitude at workplace
- Technical Writing: Differences between technical and literary style, Elements of style; Common Errors.
- Report Writing: Basics of Report Writing; Structure of a report; Types of reports.
- Technology-based Communication: Netiquettes: effective e-mail messages; power-point presentation; enhancing editing skills using computer software
- Soft skills, Teamwork, meetings
- Speaking in Public, Business Presentation skills

UNIT IV: Organizational Communication: Public Relations & Brand Management 12 Hours

This unit explores the importance of public relations and brand management in Organizational Communication. It also elaborates upon the various tools related to public relations.

- Public Relations- concept , relevance and significance
- PR Tools- interpersonal, mass media and selective media
- PR & Media Relations
- Branding and Image Formation of Organizations
- Social Media Management of Organization’s brand

TUTORIAL
(Credits 1; Hours 15)

- Business Proposal Writing
- Making Effective Presentations
- Effective Public Speaking

- Problem Solving and Conflict Resolution Group Activities
- Group Discussion
- Assignments on Technical Writing
- PR Kit development
- Framing a brand statement and pitch for project

Essential Readings

Unit I

- Mumby, D. K., & Kuhn, T. (2024). *Organizational communication: A critical approach* (3rd ed.). SAGE Publications.
- Keyton, J. (2025). *Communication and organizational culture*. SAGE Publications.

Unit II

- Adler, R. B., Rodman, G., & du Pré, A. (2017). *Understanding human communication* (13th ed.). Oxford University Press.
- Kumar, S., & Lata, P. (2018). *Communication Skills*. Oxford University Press India.
- Acharya Seshaiah Kandamuru (2018). *Communication Skills: Improvement through Listening, Reading, Speaking, Writing and Conversation*. Notion Press.

Unit III

- Alex, K. (2018). *Soft skills: Know yourself and know the world* (3rd ed.). S. Chand Publishing.
- Kakarla, U., Gupta, T., & Pundir, L. (2024). *Functional English for communication*. Atlantic Publishers & Distributors.
- Raman, M., & Sharma, S. (2017). *Technical communication: Principles and practice* (3rd ed.). Oxford University Press India.

Unit IV

- Jethwaney, J. (2024). *Corporate communication: Concepts and practice*. Routledge India.
- Oliver, S. (2004). *Handbook of corporate communication and public relations: pure and applied*. UK: Routledge
- Sengar, P. (2022). *Public relations and corporate communication: Building brand trust*. Redshine Publications.
- Singh, V. (2022). *Public Relations and Corporate Communication*. Redshine Publications.

Suggested Readings

- Kramer, M. W., & Bisel, R. S. (2024). *Organizational Communication: A Lifespan Approach (3rd ed.).* Oxford University Press.
- Modaff, D. P., Butler, J. A., & DeWine, S. (2016). *Organizational communication: Foundations, challenges, and misunderstandings* (3rd ed.). Pearson.
- Smith, R. D. (2021). *Strategic planning for public relations* (6th ed.). Routledge.
- Stohl, C. (2025). *Organizational communication*. SAGE India/SAGE Publications.

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

Annexure-5

UNIVERSITY OF DELHI

Department of Home Science

Faculty of Science

1-Year M.Sc.

Development Communication & Extension

Coursework Track

Department of Home Science

University of Delhi

Course Credit Structure- NEP 2025

The Department of Home Science offers a one-year Master's Programme in Development Communication & Extension designed to equip students with a deep understanding of communication strategies, participatory approaches, and community development practices. The programme bridges theory and practice, emphasizing communication for social change, media literacy, research, and extension management. Students gain the knowledge and skills needed to design, implement, and evaluate communication interventions that empower communities and foster sustainable development. The curriculum integrates academic rigor, field engagement, and technological innovation, ensuring students are prepared for leadership roles in development organizations, media institutions, academia, and research agencies.

Programme Specific Objectives:

- To build a strong foundation in development theories, participatory communication, and extension education for sustainable social transformation.
- To equip students with advanced research and analytical skills for investigating development issues and evaluating communication strategies.
- To strengthen students' ability to design and implement evidence-based communication programmes addressing real-world social challenges.
- To cultivate ethical, inclusive, and gender-sensitive perspectives in all aspects of development and communication practice.
- To foster appreciation for community knowledge systems and participatory methods that empower marginalized groups.
- To prepare graduates for professional roles in development agencies, NGOs, media organizations, research institutes, and academic institutions.
- To promote engagement with emerging communication technologies for effective dissemination, advocacy, and behavioural change.

Programme Specific Outcomes:

The post graduate program in the Department of Development Communication & Extension, strives to educate and train students to enable them to:

- Apply development and communication theories to design context-specific, community-driven interventions.
- Demonstrate proficiency in media production, research methodologies, and participatory communication techniques.
- Critically evaluate and apply ICTs and digital tools for social and behavioural change communication.
- Integrate ethical and gender-sensitive principles into communication and extension practices.
- Work collaboratively with diverse stakeholders to implement and manage community-based programmes.
- Exhibit leadership in development communication, policy advocacy, and capacity-building initiatives.
- Conduct innovative research contributing to sustainable development, public awareness, and inclusive growth.

List of Courses to be offered to students opting for Structure-1 of M.Sc. in 1st and 2nd Semester of one year course							
Type of Course	Type	Semester	Name of Courses	Credit in each course			
				Lecture	**Tutorial**	**Practical**	**Total**
SEMESTER - I							
Discipline Specific Core Course	**DSC1**	**I**	**Monitoring, Evaluation & Learning for Development**	**3**	**0**	**1**	**4**
Discipline Specific Core Course	**DSC2**	**I**	**New Media and AI and its Application to Home**	**2**	**0**	**2**	**4**
Discipline Specific Elective Course	**DSE1** **DSE2** **DSE3**	**I**	**From the Pool of DSEs below:** • **Statistics and Data Management**	**3**	**0**	**1**	**4**
			• **Consumption Behavior and Sustainable Development**	**3**	**1**	**0**	**4**
			• **Food Systems & Nutrition Security**	**3**	**0**	**1**	**4**
			• **Human Centered Design & Innovation**	**3**	**0**	**1**	**4**
			• **Social Entrepreneurship**	**3**	**1**	**0**	**4**
			• **Poverty, livelihood systems & Skilling**	**3**	**1**	**0**	**4**
			• **Civil Society and Volunteer Management**	**3**	**1**	**0**	**4**
			• **Community Organization, Social Policy & Development**	**3**	**1**	**0**	**4**
Skill Based Course	**SBC1**	**I**	**From the Pool of even semesters SBCs given below:** • **Media for Change: Print** • **Internship, Documentation and Reporting- I**	**2**	**0**	**0**	**2**

			• **Traditional Media for Change**				
SEMESTER II							
Discipline Specific Core Course	**DSC1**	**II**	**Climate Change, Green Technologies and Environment Action**	**3**	**0**	**2**	**4**
Discipline Specific Core Course	**DSC2**	**II**	**Communication for Nutrition, Health and Wellbeing**	**2**	**0**	**2**	**4**
Discipline Specific Elective Course	**DSE1**	**II**	**From the Pool of DSEs given**				
Discipline Specific Elective Course	**DSE2**	**II**	• **Rural Marketing and Development**	**3**	**1**	**0**	**4**
Discipline Specific Elective Course	**DSE3**	**II**	• **Public Administration and Governance**	**3**	**1**	**0**	**4**
			• **Gender, Diversity and Inclusion**	**3**	**1**	**0**	**4**
			• **SBC: Theory & Practice**	**2**	**0**	**2**	**4**
			• **Project Management & Grant Writing**	**3**	**0**	**1**	**4**
			• **Peace, Human Rights and Humanitarian Action**	**3**	**1**	**0**	**4**
			• **Training & Capacity Building**	**2**	**0**	**2**	**4**
			• **ESG, Sustainability Reporting and Social Impact**	**3**	**0**	**1**	**4**
			• **Lifelong Learning and Life Skills**	**3**	**1**	**0**	**4**
Skill Based Course SBC-4 IV	**SBC1**	**II**	**From the Pool of odd semesters**	**2**	**0**	**0**	**2**

			SBCs given below: • **Corporate Communication and Brand Management** • **Media for Change: Audio** • **Internship, Documentation and Reporting- II** • **Media for Change: Video**				
General Elective Course	**GE3**	**II**	**Organizational Communication : Tools & Techniques**	**3**	**1**	**0**	**4**
Pool of Discipline Specific Elective Courses to be offered in the 1st semester#	**Statistics and Data Management**						
	Consumption Behaviour and Sustainable Development						
	Food Systems & Nutrition Security						
	Human Centred Design & Innovation						
	Social Entrepreneurship						
	Poverty, livelihood systems & Skilling						
	Civil Society and Volunteer Management						
	Community Organisation, Social Policy & Development						
Pool of Discipline Specific Elective Courses to be offered in the 2nd Semester##	**Rural Marketing and Development**						
	Public Administration and Governance						
	Project Management & Grant Writing						
	Gender, Diversity and Inclusion						
	SBC: Theory & Practice						
	Training & Capacity Building						

	ESG, Sustainability Reporting and Social Impact
	Peace, Human Rights and Humanitarian Action
	Lifelong Learning and Life Skills
Pool of Skilled Based Courses to be offered in the odd Semester#	**Media for Change: Print**
	Internship, Documentation and Reporting- I
	Traditional Media for Change
Pool of Skilled Based Courses to be offered in the even Semester##	**Corporate Communication and Brand Management**
	Media for Change: Audio
	Internship, Documentation and Reporting- II
	Media for Change: Video

DEPARTMENT OF DEVELOPMENT COMMUNICATION AND EXTENSION

1-Year MSc Curriculum under NEP

Coursework Track

DSC				DSE				SBC				Dissertation/Academic Project/Entrepreneurship
Paper Title (4 Credits each)	**Credit Distribution**			**Paper Title (4 Credits each)**	**Credit Distribution**			**Paper Title (2 Credits each)**	**Credit Distribution**			
	Th	**Tu**	**Pr**		**Th**	**Tu**	**Pr**		**Th**	**Tu**	**Pr**	
SEMESTER I												
Pick All 2				**Pick Any 3**								
Monitoring, Evaluation & Learning for Development	3	0	1	Statistics and Data Management	3	0	1	Pick **Any 1** from the list of odd semester courses listed below				NIL
				Consumption Behaviour and Sustainable Development	3	1	0					
				Food Systems & Nutrition Security	3	0	1					
				Human Centred Design & Innovation	3	0	1					
				Social Entrepreneurship								
				Poverty, livelihood systems & Skilling								

				Civil Society and Volunteer Management Community Organisation, Social Policy & Development	3 3 3 3	0 1 1 1	1 0 0 0		
New Media and AI for Development	2	0	2						

SEMESTER II									
Pick All 2				**Pick Any 3**					
Climate Change, Green Technologies and Environment Action	3	0	1	Rural Marketing and Development	3	1	0		NIL
				Public Administration and Governance	3	1	0	Pick **Any 1** from the list of even semester courses listed below	
				Gender, Diversity and Inclusion	3	1	0		
				SBC: Theory & Practice	2	0	2		
				Project Management & Grant Writing	3	0	1		

				Peace, Human Rights and Humanitarian Action Training & Capacity Building ESG, Sustainability Reporting and Social Impact Lifelong Learning and Life Skills	3 2 3 3	1 0 0 1	0 2 1 0		
Communication for Nutrition, Health and Wellbeing	2	0	2						

List of Skill Based Courses

Odd Semester	Even Semester
Media for Change: Print	Corporate Communication and Brand Management
Internship, Documentation and Reporting- I	Media for Change: Audio
Traditional Media for Change	Internship, Documentation and Reporting- II
	Media for Change: Video

DISCIPLINE SPECIFIC CORE COURSE
MONITORING, EVALUATION & LEARNING FOR DEVELOPMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Monitoring, Evaluation & Learning for Development	**4**	**3**	**-**	**1**	**As per admission requirements**	**Should be aware of concept of programme monitoring and evaluation**

Learning Objectives

1. To understand the conceptual and theoretical foundations of monitoring, evaluation, and learning in development programmes.
2. To gain the ability to design and apply MEL frameworks and tools for planning, implementation, and assessment of social and behavioural change initiatives.
3. To critically analyse the use of MEL systems for improving accountability, adaptive learning, and evidence-based policy-making.

Learning Outcomes

The students will be able to:

1. Differentiate between monitoring, evaluation, and learning functions within the development cycle.
2. Construct and operationalize a logical framework and results-based management system for a development project.
3. Design appropriate qualitative and quantitative indicators and data collection tools.
4. Apply participatory and adaptive MEL approaches in real-world contexts.

THEORY
(Credits 3, Hours 45)

Unit I: Concepts and Frameworks of Monitoring, Evaluation & Learning (12 hours)

This unit explores the evolution, purpose, principles and related approaches to MEL.

- Evolution and purpose of M&E in development practice

- Relationship between Monitoring, Evaluation, and Learning (MEL)
- Principles of Results-Based Management (RBM)
- Theories of Change and Logical Framework Approach (LFA)
- Key terminology and standards (OECD-DAC, UNDP, World Bank)

Unit II: Designing and Implementing Monitoring Systems (10 hours)

This unit focusses on the various frameworks and indicators required for setting up monitoring systems.

- Monitoring frameworks and indicator development
- Types of indicators: input, output, outcome, and impact
- M&E tools and approaches
- Use of ICT, AI and digital tools for monitoring
- Ethical considerations and data quality assurance

Unit III: Evaluation Design, Methods, and Use (13 hours)

This unit explores the various types of evaluation designs.

- Types of evaluation: formative, summative, process, impact, developmental
- Evaluation design: experimental, quasi-experimental, and mixed-methods approaches
- Participatory and utilization-focused evaluation
- Gender responsive evaluations
- Reporting, dissemination, and stakeholder engagement
- Learning from evaluation: feedback loops and adaptive management

Unit IV: Learning, Knowledge Management and Policy Linkages (10 hours)

This unit focusses on the several linkages of MEL systems.

- Integrating learning within MEL systems
- Organizational learning and reflective practice
- Knowledge management tools and platforms for MEL
- Communicating results for advocacy and decision-making

PRACTICAL
(Credits 1; Hours 30)

- Interactive lectures and seminars
- Group exercises for developing log frames, indicators, and theories of change
- Case study analysis of M&E reports from UN/NGOs
- Field assignments for data collection and learning reflection
- Data collection tools and frequency
- MIS, dashboards, participatory tools
- Case studies of MEL in social and behavioural change (SBC), gender, and sustainable development programmes

Essential Readings:

Unit-I

- OECD Development Assistance Committee. (2019). *Better criteria for better evaluation: Revised evaluation criteria definitions and principles for use*. OECD Publishing.
- UNDP. (2021). *Handbook on planning, monitoring and evaluating for development results* (Updated ed.). United Nations Development Programme.
- UNICEF. (2015). *Theory of change: UNICEF guidance document*. United Nations Children's Fund.

Unit-II

- UNDP. (2021). *Handbook on planning, monitoring and evaluating for development results* (Updated ed.). United Nations Development Programme.
- Yim, M., & Gomez, R. (2021). ICT4D evaluation: Its foci, challenges, gaps, limitations, and possible approaches for improvement. *Information Technology for Development, 27*(4), 684–708. https://doi.org/10.1080/02681102.2021.1951151
- Magis-Weinberg, L., Ballonoff Suleiman, A., & Dahl, R. E. (2021). Context, development, and digital media: Implications for very young adolescents in LMICs. *Frontiers in Psychology, 12*, 632713. https://doi.org/10.3389/fpsyg.2021.632713

Unit-III

- NTRAC. (2020). *Learning from monitoring and evaluation: Reflections on practice*. INTRAC.
- OECD Development Assistance Committee. (2019). *Better criteria for better evaluation: Revised evaluation criteria definitions and principles for use*. OECD Publishing.
- Patton, M. Q. (2011). *Developmental evaluation: Applying complexity concepts to enhance innovation and use*. Guilford Press.
  (Actively used in post-2015 evaluation practice and curricula)

Unit-IV

- USAID. (2019). *Collaborating, learning and adapting (CLA) framework*. United States Agency for International Development.
- UNDP. (2021). *Handbook on planning, monitoring and evaluating for development results* (Updated ed.). United Nations Development Programme.

Suggested Readings:

- Mayne, J. (2017). *Theory of Change Analysis: Building Robust Theories of Change*.*Canadian Journal of Program Evaluation*, 32(2), 155–173.
- UNICEF (2020). *Monitoring Results for Equity System (MoRES)*. UNICEF Evaluation Office.

Suggested Supplementary Online Resources

- UNICEF Evaluation Office: https://evaluation.unicef.org
- OECD-DAC Evaluation Criteria: https://www.oecd.org/dac/evaluation/
- BetterEvaluation Platform: https://www.betterevaluation.org/
- USAID Learning Lab: https://usaidlearninglab.org/

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

DISCIPLINE SPECIFIC CORE COURSE

NEW MEDIA AND AI AND ITS APPLICATION TO HOME

CREDIT DISTRIBUTION,ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
New Media and AI and its Application to Home	4	2	-	2	As per admission requirements	Should have studied papers in media

Learning Objectives

- To develop a comprehensive understanding about the role of new media in development of the society
- To acquire insights into technological progress and its application within the media sector
- To evaluate future opportunities and challenges in integrating AI and new media for development

Learning Outcomes

The students will be able to:

- Demonstrate an extensive understanding of new media and AI concepts, as well as their significance in development communication.
- Assess ethical considerations, digital rights, and the policy frameworks that regulate AI and new media.
- Formulate strategies that utilize participatory communication, digital literacy, and inclusive technologies to engage communities in development initiatives.

THEORY

(Credits 2, Hours 30)

Unit I: Introduction to New Media and Development 8 Hours

This unit provides a critical analysis of the conceptual and theoretical foundations of new media, ICT4D, and digital development. It outlines the historical progression of media technologies and investigates essential concepts for development communication.

- Definitions: New Media, ICT4D, Digital Development
- Historical evolution of media technologies
- Theories of Development Communication (Diffusion of Innovations, Participatory Communication)
- Case studies: e-health, e-education, e-governance initiatives

Unit II: New Media for Social Change **8 Hours**

This unit provides a critical examination of the transformative influence of new media within modern society. It investigates the historical development of digital platforms, the effects of social media on traditional media, community engagement, and the spread of information for social change.

- Salient features and advantage of new media over traditional media.
- History and evolution of new media and problems of access
- Social media and their impact on radio TV and Newspapers.
- Role of social media in mobilizing communities
- Social media for information dissemination, public awareness, and civic engagement
- Digital activism: hashtags, online petitions, and virtual protests

Unit III: AI and Participatory Development **8 Hours**

This unit investigates the incorporation of AI and digital technologies in participatory development, highlighting the importance of community involvement, digital inclusion, and accessibility. It analyses the use of AI in various sectors while critically evaluating future prospects, challenges, and ethical implications within development contexts.

- Community engagement using digital and AI tools
- Digital literacy and inclusive AI adoption
- Digital inclusion, accessibility & marginalized groups
- Applications of AI in development: poverty prediction, climate change, healthcare -
- AI for health, agriculture, education, governance and public administration
- AI for disaster management and crisis communication
- AI for SDGs (UN Sustainable Development Goals)
- Future AI in development: opportunities and challenge

Unit IV: Ethics, Governance, and Policy in AI and New Media **6 Hours**

This unit provides a critical analysis of the ethical, social, and regulatory aspects of AI and new media in the context of development. It addresses various issues such as accountability, data protection, misinformation, as well as the national and international frameworks that govern the responsible and secure utilization of emerging technologies.

- AI ethics: fairness, transparency, accountability, bias mitigation

- Data protection, privacy, and digital rights and responsible data use
- AI safety, security, and risk assessment
- Virtual Reality (VR) and Augmented Reality (AR) in development applications
- Deepfakes, misinformation & content authenticity
- Social, cultural, and economic impacts of AI and new media technologies
- National and international AI strategies and regulatory frameworks

PRACTICAL
(Credits 2, Hours 60)

- Design a digital campaign on any social or development issue using hashtags, storytelling, and community engagement.
- Evaluate real-world examples of e-health, e-education, e-governance, or AI-based development projects
- Analysing an AI or social media intervention for fairness, privacy, bias, and compliance with national/international policies.
- Identify and analyze some examples of misinformation or deepfakes on social media and propose strategies to verify content authenticity.

Essential Readings

Unit - I

- Heeks, R. (2018). *Information and communication technology for development (ICT4D)* (3rd ed.). Routledge.
- Servaes, J. (2015). *Communication for development and social change* (2nd ed.). Sage Publications.
- Narayan, S. S., & Narayanan, S. (Eds.). (2016). *India connected: Mapping the impact of new media*. SAGE Publications India.

Unit - II

- Ihsaniyati, H., Sarwoprasodjo, S., Muljono, P., & Gandasari, D. (2023). The use of social media for development communication and social change: A review. *Sustainability, 15*(3), 2283. https://doi.org/10.3390/su15032283
- Narayan, S. S., & Narayanan, S. (Eds.). (2016). *India connected: Mapping the impact of new media*. SAGE Publications India.
- Khalasa, N., et al. (2025). *Digital pulse: Shaping the future of media and communication*. Bhumi Publishing.

Unit - III

- Penh, B. (2025). AI-powered social media for development in low- and middle-income countries. *Media and Communication, 13*. https://doi.org/10.17645/mac.9577
- Sanyal, K., & Chakrabarti, R. (2020). *Artificial intelligence and India*. Oxford University Press.

Unit - IV

- Batool, A., Zowghi, D., & Bano, M. (2024). Responsible AI governance: A systematic literature review. *arXiv*. https://arxiv.org/abs/2401.10896
- Giralt Hernández, E. (2024). Towards an ethical and inclusive implementation of artificial intelligence in organizations: A multidimensional framework. *arXiv*. https://arxiv.org/abs/2405.01697
- Hogenhout, L. (2021). A framework for ethical AI at the United Nations. *arXiv*. https://arxiv.org/abs/2104.12547

Suggested Readings

- Beniwal, A. (Ed.). (2023). *Artificial intelligence, ethics, and the digital society: Pathways to sustainable development*. Deep Science Publishing.
- Floridi, L. (Ed.). (2021). *Ethics, Governance, and Policies in Artificial Intelligence*. Springer
- Kak, S. (2024). *The Age of Artificial Intelligence*. Garuda Prakashan.
- Liu, Z., & Zheng, Y. (2022). *AI Ethics and Governance: Black Mirror and Order*. Springer
- Mishra, S. (2021). Digital Cultures (1st ed.). Routledge. https://doi.org/10.4324/9781003155225
- Rainer Mühlhoff. (2021). *The ethics of AI: Power, critique, responsibility*. Bristol University Press.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
STATISTICS AND DATA MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Statistics and Data Management	4	3	0	1	As per admission criteria	Nil

Learning Objectives

- To develop understanding of fundamental and advanced statistical concepts used in research and data analysis.
- To enable students to apply descriptive and inferential statistics for real-world decision- making.
- To strengthen ability to formulate hypotheses, select appropriate statistical tests, and interpret outputs.
- To prepare students for quantitative research, industry analytics, and academic data projects.
- To train students in using Excel and SPSS for data handling, visualization, and interpretation.

Learning Outcomes

The students would be able to:

- Explain key concepts in descriptive and inferential statistics.
- Organize, clean, and summarize datasets using appropriate statistical tools.
- Apply probability distributions, correlation, regression, and hypothesis testing.
- Use Excel and SPSS for data visualization, statistical testing, and reporting.
- Interpret statistical outputs and draw valid conclusions for research decisions.
- Design and execute quantitative data analysis workflows independently.

THEORY
(Credits 3; Hours 45)

UNIT I: Introduction and descriptive Statistics **12 Hours**

This unit will introduces the foundations of statistics and techniques for summarizing and describing data.

- Definition, scope, and applications of statistics
- Types of data: qualitative and quantitative
- Scales of measurement
- Classification & tabulation of data
- Graphical and visual representations
- Measures of central tendency: mean, median, mode
- Measures of dispersion: range, variance, standard deviation, coefficient of variation

- Skewness and kurtosis: meaning and interpretation

UNIT II: Probability and Probability Distributions 10 Hours

This unit explores probability concepts and major statistical distributions.

- Basic probability concepts: Addition & multiplication theorems
- Random variables: discrete and continuous variable
- Binomial, Poisson and Normal distributions
- Sampling theory & sampling distributions
- Central Limit Theorem

UNIT III: Correlation and regression 8 Hours

This unit focuses on analysing relationships between variables.

- Correlation: Pearson and Spearman correlation
- Simple linear regression: model, estimation, interpretation
- Multiple linear regression: assumptions, multicollinearity, model building

UNIT IV: Hypothesis Testing and Non-Parametric Methods 15 Hours

This unit introduces hypothesis testing frameworks and non-parametric alternatives for non- normal data.

- Concept of hypothesis: null & alternative
- Types of errors, significance levels, p-value
- Parametric tests:
  - z-test
  - t-test (one sample, independent, paired)
  - ANOVA- One way
  - Chi-square test
- Non-parametric tests:
  - Mann–Whitney U test
  - Wilcoxon signed-rank test
  - Kruskal–Wallis test
- Interpretation and reporting of statistical results
- Research Conclusion and recommendation

PRACTICAL
(Credits 1; 30 hours)

1. Data Entry, Coding & Cleaning: Importing data, handling missing values, variable labels, Excel formulas.
2. Descriptive Statistics & Visualization: Mean, Standard Deviation, frequency tables, histograms, boxplots (Excel + SPSS).
3. Cross-Tabulation & Chi-Square Test: PivotTables in Excel; Crosstabs in SPSS.
4. Correlation Analysis: Pearson & Spearman correlations; scatterplots.
5. Simple Linear Regression: Trendline in Excel; Regression output in SPSS.
6. Multiple Regression: Model summary, coefficients, interpretation using SPSS.
7. t-Tests: Independent, paired, and one-sample t-tests in SPSS.
8. ANOVA (One-way & Two-way): Running ANOVA and post-hoc analysis.
9. Non-Parametric Tests: Mann-Whitney, Wilcoxon, Kruskal–Wallis in SPSS.
10. Report Generation & Interpretation
11. Preparing APA-style tables, graphs, and interpretations in Excel/SPSS.

Essential Readings:

UNIT I

This unit describes the foundations of statistics and techniques for summarizing and describing data.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.). Pearson Prentice Hall.
- Bernard, H. R. (2000). *Social research methods: Qualitative and quantitative approaches*. Sage.
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.). CreateSpace Independent Publishing Platform.
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*. Wiley.

UNIT II

This unit deals with the probability concepts, rules of probability, discrete and continuous distributions (Binomial, Poisson, Normal).

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*.

UNIT III

This unit focuses on relationship between variables, correlation coefficients, simple and multiple regression, regression assumptions.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Muijs, D. (2004). *Doing quantitative research in education with SPSS*. Sage.

UNIT IV

The unit deals with statistical inference such as t-tests, ANOVA, Chi-square, non-parametric tests (Mann-Whitney, Wilcoxon, Kruskal-Wallis), decision making.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*.
- Muijs, D. (2004). *Doing quantitative research in education with SPSS*.

Suggested Readings

- Field, A. (2025). *Discovering Statistics Using IBM SPSS Statistics* (6th ed.). Sage.
- Kalyanaraman, K., Ramanathan, H. N., & Harikumar, P. N. (2025). *Statistical Methods for Research: A Step-by-Step Approach Using IBM SPSS*. Atlantic Publishers.
- Healey, J. F., & Donoghue, C. (2021). *Statistics: A Tool for Social Research and Data Analysis* (11th ed.).

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

DISCIPLINE SPECIFIC CORE COURSE

CONSUMPTION BEHAVIOUR AND SUSTAINABLE DEVELOPMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Consumption Behaviour and Sustainable Development	**4**	**3**	**1**	**0**	**As per admission requirements**	**Should be aware of basics of Communication Concepts & Theories**

Learning Objectives

1. To understand the concept and theories of consumption and its linkages with production, distribution, and policy perspective.
2. To develop an understanding of consumption behaviour of individuals, families and communities in diverse socio-economic contexts.
3. To familiarise students with the linkages between consumption, environment, poverty, resources used and sustainable development.
4. To understand the role of people's in initiatives, nationally and globally in promoting sustainable consumption .
5. To introduce communication and SBCC perspectives for promoting sustainable and responsible consumption.

Learning Outcomes

After completing this course, students will be able to:

1. Understand the meaning ,concept and theories of consumption and it's relationship with production , public policy and resource use
2. Analyse the inter-linkages between consumption practices, resource use and sustainable development at local, national and global levels in preservation of people's rights and sustainable consumption
3. Critically examine consumer rights, responsibilities, protections and public policy frameworks.
4. Understand the role of people's initiatives nationally and globally in preservation of people’s right for sustainable consumption

THEORY

(Credits 3; Hours 45)

UNIT I: Understanding Consumption Behaviour of Families and Communities 12 Hours

This unit introduces the meaning and dimensions of consumption, locating families and communities as key consumption units, and exploring factors shaping consumption in different socio-economic and cultural settings.

- Consumption: concept ,theories, linkages with production, distribution,public policy resource use; implications for families and communities.
- Determinants of consumption behaviour: economic, cultural, social, psychological and technological factors
- Historical and contemporary patterns of consumption: local, national and global perspectives
- Differences in consumption practices: rural–urban, North–South, class, gender and life-cycle perspectives
- Theories and models for understanding consumer behaviour (brief overview)
- Production, distribution and marketing strategies and their implications for consumption choices

UNIT II: Consumption, Health, Environment, Poverty and Sustainable Development 12 Hours

This unit focuses on the linkages between consumption, resource use and sustainable development, highlighting challenges of over-consumption, environmental degradation and inequity.

- Consumption and sustainable development: linkages between consumption, production, public policy health,environment, resource use and lifestyle
- Sustainable Development Goals (SDGs): goals and targets related to responsible consumption and production; environment, health, poverty, literacy etc. (SDG 12)
- Carbon footprint, lifestyle, and impact on environment
- Indicators related to consumption, inequality and sustainability: national and global overviews
- Case illustrations of unsustainable vs. sustainable consumption practices in food, clothing, housing, mobility, digital products

UNIT III: Consumers, Rights, Responsibilities and Public Policy 11 Hours

This unit examines consumers as rights-bearing citizens, the policy and legal frameworks governing consumption, and the role of consumer movements.

- Indian families as consumption units: vulnerabilities and constraints
- Problems faced by consumers in India: rural, urban and tribal perspectives, Challenges and opportunities in emerging economies
- Consumer protection in India: history and evolution of the consumer movement
- Consumer rights and responsibilities: laws, safeguards and grievance mechanisms (overview)
- Theories and models of consumer behaviour
- Role of consumer organisations, civil society and citizen groups – national, regional and global

UNIT IV: Communication, SBCC and Sustainable Consumption 10 Hours

This unit introduces behavioural and communication perspectives for promoting sustainable consumption and responsible consumer behaviour.

- Behaviour Change Communication (BCC) and Social and Behaviour Change Communication (SBCC) perspectives on consumption
- Advocacy and campaigns for sustainable consumption and public interest, people movements in protection of their righs (illustrative national/global campaigns)
- Elements, tools and techniques for consumer education and awareness (mass media, social media, community media, IEC)
- Networking, lobbying and mobilising pressure groups for sustainable consumption and policy advocacy
- Designing simple SBCC-based ideas for responsible consumption among youth, families and communities

TUTORIAL
(Credits 1; Hours 15)

- Mapping Personal Consumption: Recording and analysing students' own weekly consumption patterns (food, clothing, mobility, digital use), identifying unsustainable practices and alternatives.
- Case Study Analysis: Case studies on sustainable vs. unsustainable consumption (e.g., fast fashion, plastic usage, food waste, energy use).
- Policy & Campaign Review: Review of selected national/global campaigns and policies on sustainable consumption; group presentations.
- Consumer Rights Exercise: Reading and summarising key consumer protection provisions and applying them to real or simulated cases.
- Designing a Micro SBCC Concept: Group activity to conceptualise a small SBCC idea (poster/social media reel/community event) for promoting one sustainable consumption practice in the local context.
- Consumer choices and behaviours: Identify the consumers determine eco-friendliness of products.
- Designing for sustainability: Process, product and systems innovation – improved production processes, eco-friendly products, innovative low-impact technologies, supply chain management

Essential Readings

UNIT-I

- Stillerman, J. (2015). *The sociology of consumption: A global approach*. Polity Press.
- Reisch, L. A., & Thøgersen, J. (Eds.). (2016). *Handbook of research on sustainable consumption*. Edward Elgar Publishing.
- Mukherjee, S., & Banerjee, N. (2019). Consumption patterns, inequality and development in India. *Economic and Political Weekly, 54*(44), 45–53.
- Narayan, S. S., & Narayanan, S. (2016). *India connected: Mapping the impact of new media*. SAGE Publications India..

UNIT- II

- Reisch, L. A., & Thøgersen, J. (Eds.). (2016). *Handbook of research on sustainable consumption*. Edward Elgar Publishing.
- United Nations Environment Programme. (2017). *Sustainable consumption and production: A handbook for policymakers*. UNEP.
- Government of India, NITI Aayog. (2019). *India's voluntary national review on the implementation of the Sustainable Development Goals*. NITI Aayog.

UNIT- III

- Government of India. (2019). *The Consumer Protection Act, 2019*. Ministry of Consumer Affairs, Food & Public Distribution.
- Rao, S., & Bansal, S. (2020). Consumer protection and grievance redressal mechanisms in India. *Indian Journal of Public Administration, 66*(2), 214–229.

- Sharma, A., & Gupta, R. (2017). Consumer awareness and protection in emerging Indian markets. *Journal of Consumer Policy, 40*(3), 343–360. https://doi.org/10.1007/s10603-017-9349-5

UNIT- IV

- McKenzie-Mohr, D. (2018). *Fostering sustainable behavior: An introduction to community-based social marketing* (4th ed.). New Society Publishers.
- UNICEF. (2020). *Social and behavior change communication for sustainable development*. UNICEF.
- Kumar, R., & Purohit, H. (2019). Role of communication strategies in promoting sustainable consumption in India. *Media Watch, 10*(3), 485–499.

Suggested Readings

- FICCI/UNEP, 2015. Designing a Sustainable Financial System for India: Interim Report. Available at: http://ficci.in/spdocument/20546/UNEP-Interim-Report.pdf
- UNDP projects on environmental aspects related to SCP in India; Available at: http://www.in.undp.org/content/dam/india/docs/UNDP%20Fact%20Sheet%20-%20MEFCC.pdf
- UNIDO projects on cleaner production topics; Available at: http://www.unido.org/en/where-wework/asiaandthepacific/selected-projects.html

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

DISCIPLINE SPECIFIC ELECTIVE

FOOD SYSTEMS & NUTRITION SECURITY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Food Systems & Nutrition Security	4	3	0	1	As per admission requirements	Should be aware of basic concepts of food & nutrition

Learning Objectives

- To Understand the concepts, components, and functioning of food systems and their influence on nutrition, health, and sustainability.
- To analyze national and international policies, programs, and interventions for improving food and nutrition security.
- To evaluate the roles of key national and international organizations in combating malnutrition and supporting nutrition security initiatives.

Learning Outcomes

The students would be able:

- Identify and classify forms of food insecurity and understand the factors contributing to nutritional insecurity at household and community levels.
- Gain knowledge of community-based nutrition interventions and design strategies for behavior change and nutrition education.
- Critically evaluate policies and programs and assess their impact on nutrition outcomes.

Unit I: Introduction to food systems **10 hours**

This unit provides an overview of food systems, explores the interconnections between agriculture, environment, nutrition, and health, and compares traditional and modern food systems. Elucidating the role of key stakeholders in shaping food outcomes. The unit also highlights food system outcomes and explains how these are measured using national and international indicators.

- Definition and components of food systems (production, processing, distribution, consumption)
- Inter linkages between agriculture, environment, nutrition, and health

- Traditional vs. modern food systems
- Stakeholders: farmers, consumers, private sector, government, NGOs
- Food system outcomes: availability, access, utilization, stability
- Indicators of Food system : National and international indicators

Unit II: Food Security and Nutrition Security **12 hours**

This unit elucidates the concept and dimensions of food security, investigates the various forms of food insecurity along with their determinants. Additionally, the unit assesses food security policies in India, household coping mechanisms, and global trends in malnutrition, which encompass undernutrition, micronutrient deficiencies, and overweight/obesity.

- Introduction, forms of food insecurity: Hunger, poverty, chronic hunger
- Conceptual framework of food security: availability of food, accessibility of food, consumption & utilization
- Food security concept, types of food insecurity; poverty, hunger and malnutrition
- Factors leading to food & nutritional insecurity in India, household food insecurity and coping strategies
- Determinants of Nutrition Security: Biological, socioeconomic, cultural, environmental factors, Gender and nutrition
- Evidence on global malnutrition patterns: undernutrition, micronutrient deficiencies, overweight/obesity

Unit III: Policies and intervention for Food & Nutrition Security **10 hours**

This unit conducts a critical examination of policies and interventions designed to ensure food and nutrition security on both national and international scales. It offers a comprehensive analysis of significant Indian initiatives and global frameworks. Additionally, it explores policies that affect agricultural production, subsidies, and food pricing, assessing their impact on dietary quality, accessibility, and overall nutrition security.

- National Polices: National Food Security Act (NFSA), Public Distribution System (PDS), ICDS, POSHAN Abhiyan, Mid-Day Meal Scheme
  International policies: Right to Food, Sustainable Food Policy frameworks
- FAO Voluntary Guidelines on Food Security and Nutrition and WHO Nutrition Guidelines
- UN Sustainable Development Goals (SDG 2: Zero Hunger, SDG 3: Good Health)
- Policies affecting crop production, subsidies, and food prices and its impact on nutritional outcomes

Unit IV: Community Health & Nutrition **13 hours**

This unit provides an integrated understanding of the role of India's traditional knowledge systems promoting community health & nutrition. It explores diet diversity across the lifecycle, the role of organic and nutri-sensitive farming systems, and the importance of home, kitchen, and herbal gardens in ensuring household nutrition security. It also touches upon the role of nutrition education and behavior change processes**.**

- Indian Knowledge Systems & Traditional Foods
- Diet Diversity across lifecycle
- Nutri-Sensitive Integrative Farming Systems (NSIFS),Organic Farming & Natural Farming
- Kitchen, Home & Herbal Garden
- Role of bio-diverse farming in nutrient-rich food production
- Farm-to-plate approaches for improved household nutrition
- Valorization and Food Waste Management
- Successful Indian models of nutrition-sensitive agriculture
- Role of nutrition in disease prevention and health promotion
- Nutrition education and behavior change strategies
- Role of National organizations in combating malnutrition: ICMR, ICAR, NIN.
- Role of International organizations in combating malnutrition: CARE, UNICEF, WHO, FAO, ICRISAT.

PRACTICAL
(Credits 1; Hours 30)

- Analyze coverage and impact of nutrition programs such as ICDS, Mid-Day Meal Scheme, or POSHAN Abhiyan.
- Prepare information materials (posters, pamphlets) for awareness campaigns on healthy diets and food security.
- Develop and implement nutrition education sessions and behavior change communication strategies for a target group.
- Visits to community nutrition centers, ICDS centers, local farms, or PDS outlets to observe real-world implementation of policies and programs.
- Interaction with farmers, program staff, and beneficiaries to understand practical challenges in food and nutrition security.
- Documentation of Traditional Foods: Conduct field visits or family interviews to document traditional local recipes, their cultural significance, and nutritional benefits; create a visual or digital compilation.
- Diet Diversity Assessment
- Nutri-Sensitive Farming Mini-Project: Visit an organic, natural, or NSIFS farm to observe practices; prepare a short report on nutrient-dense crops, soil health methods, and sustainability components.

Essential Readings

UNIT -I

- FAO, IFAD, UNICEF, WFP, & WHO. (2021). *The state of food security and nutrition in the world 2021: Transforming food systems for food security, improved nutrition and affordable healthy diets for all*. FAO. https://doi.org/10.4060/cb4474en

- HLPE. (2017). *Nutrition and food systems*. High Level Panel of Experts on Food Security and Nutrition, FAO.
- Pingali, P., Aiyar, A., Abraham, M., & Rahman, A. (2019). *Transforming food systems for a rising India*. Palgrave Macmillan.

UNIT -II

- FAO, IFAD, UNICEF, WFP, & WHO. (2023). *The state of food security and nutrition in the world 2023*. FAO.
- Gillespie, S., Haddad, L., Mannar, V., Menon, P., & Nisbett, N. (2015). The politics of reducing malnutrition: Building commitment and accelerating progress. *The Lancet, 382*(9891), 552–569. https://doi.org/10.1016/S0140-6736(13)60842-9
- Swaminathan, M. S., & Bhavani, R. V. (2019). Food production & availability—Essential prerequisites for sustainable food security. *Indian Journal of Medical Research, 149*(6), 681–690. https://doi.org/10.4103/ijmr.IJMR_2078_18

UNIT- III

- Government of India. (2019). *The National Food Security Act (NFSA), 2013: Updated operational guidelines*. Ministry of Consumer Affairs, Food & Public Distribution.
- NITI Aayog. (2021). *POSHAN Abhiyaan: Strategy and progress report*. Government of India.

UNIT - IV

- CARE International. (2020). *Community-based nutrition programs and approaches*. CARE.
- Whitney, E., & Rolfes, S. R. (2020). *Understanding nutrition* (15th ed.). Cengage Learning.
- Aggarwal, A., & Drewnowski, A. (2019). The role of traditional food systems in improving nutrition security in India. *Current Developments in Nutrition, 3*(3), nzz003. https://doi.org/10.1093/cdn/nzz003
- Swaminathan, M. S. (2016). From Green Revolution to Evergreen Revolution: Pathways to sustainable nutrition security in India. *Current Science, 109*(3), 456–463.

Suggested readings

- Ministry of Women and Child Development, Government of India. *Integrated Child Development Services (ICDS) Scheme Guidelines*.
- Ministry of Health and Family Welfare, Government of India. *POSHAN Abhiyaan: National Nutrition Mission*.
- Ministry of Education, Government of India. *Mid-Day Meal Scheme Guidelines*.
- Indian Council of Medical Research (ICMR). (2020). *Nutrient requirements and recommended dietary allowances for Indians*. ICMR.
- National Institute of Nutrition (NIN). (2020). *Community nutrition and health reports*. NIN.
- World Health Organization (WHO). (2020). *Nutrition guidelines and global nutrition targets*. WHO.

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

DISCIPLINE SPECIFIC ELECTIVE

HUMAN CENTRED DESIGN & INNOVATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Human Centred Design & Innovation	4	3	0	1	As per admission requirements	Should be aware of basic concepts of design

Learning Objectives

1. To understand and apply design thinking and Human-Centered Design (HCD) principles to drive social and business innovation
2. To develop skills in user research, ideation, prototyping, and testing solutions for real-world challenges
3. To manage change initiatives using participatory and inclusive approaches
4. To analyze the design considerations of traditional and contemporary oral and visual media

Learning Outcomes

The students would be able to:

1. Apply UNICEF's HCD framework to design and implement user-centered solutions.
2. Design, prototype, and test innovative and sustainable solutions for diverse challenges.
3. Lead and manage change initiatives using participatory and inclusive approaches.
4. Understand the design considerations of traditional and contemporary oral & visual media and create innovative media.

THEORY
(Credits 3; Hours 45)

UNIT I: Foundations of Human Centred Design 12 Hours

This unit explores the fundamentals of Human Centred Design touching upon key concepts and theories

- Definitions, Concepts, and Theories of Design for Innovation & Change
- Elements of Art & Principles of Design
- Introduction to Design Thinking: Principles and Process

- Evolution of Human-Centered Design and its intersection with development communication
- Core principles of HCD (empathy, iteration, co-creation, problem reframing)
- Introduction to steps of Human Centred Design Thinking
- Inclusion, and Participatory Design in HCD
- Understanding development ecosystems: stakeholders, power dynamics, and communication flows
- Ethics of participatory design in vulnerable communities
- Case studies of HCD in social innovation and development projects

UNIT II: Innovation & Change **10 Hours**

This unit discusses the fundamentals of innovation strategies, and change management frameworks to drive sustainable and impactful transformations in organizations and society.

- Theories of Creativity and Innovation
- Systems Thinking in Innovation
- Innovation Management and Organizational Change
- Behavioral Science and Change Adoption
- Business Model Innovation and Value Proposition
- Ethics and Sustainability in Innovation

UNIT III: Groundwork for effective Design **12 Hours**

This unit highlights the potential of research, ideation and prototyping for an effective design strategy. It explores the key imperatives for ensuring efficacy in message design to drive change.

- Research plans for design and development contexts
- Ethnographic and participatory research methods (interviews, observations, shadowing, immersion)
- Tools for insight generation: empathy maps, journey maps, stakeholder maps
- Cultural sensitivity and inclusion strategies in fieldwork
- Synthesizing qualitative data into user needs, motivations, and pain points
- Ideation frameworks
- Low-fidelity vs. high-fidelity prototyping (storyboards, mock-ups, role-plays, digital prototypes)
- Rapid experimentation and feedback loops
- Documentation and communication of design rationale
- Message design: Principles, Approaches and Appeals
- Audience Analysis

UNIT IV: Media for effective Design **11 Hours**

This unit highlights the potential of varied types of media that can be used to bring about change. It explores the continuum of traditional to contemporary media and its efficacy in harnessing change.

- Media Classification
- Methods for using media effectively
- Traditional Media for Change: Puppetry, Street Theatre, Games, Scrolls etc
- Digital Media for Change: Social Media, Apps, Digital billboards, Dashboards etc., Pitching and Storytelling for Innovation
- Strategy planning, implementation & evaluation

PRACTICAL
(Credits 1; Hours 30)

- Ideation Techniques: Brainstorming, SCAMPER, and Mind Mapping
- Rapid Prototyping
- Minimum Viable Product (MVP) Development

- User Testing and Iterative Design
- Real-world Problem-Solving through Live Projects
- Development of Design/Innovation Kit: Traditional Media
- Development of Design/Innovation Kit: Contemporary Media
- Innovation Metrics and Performance Evaluation
- Creating design using open source software and Artificial Intelligence (AI)
- Presenting an Innovation Solution

Essential Readings

UNIT- I

Brown, T., & Katz, B. (2019). *Change by design: How design thinking transforms organizations and inspires innovation* (Rev. ed.). New York, NY: Harper Business.

Sanders, E. B. N., & Stappers, P. J. (2018). Co-creation and the new landscapes of design. *CoDesign*, 14(2), 1–16. https://doi.org/10.1080/15710882.2018.1464921

Thomas, P. N. (2019). *Communication and development: Freirean perspectives*. New Delhi, India: Sage Publications.
(For participatory design, ethics, power, and development ecosystems)

UNIT- II

Christensen, C. M., Raynor, M. E., & McDonald, R. (2015). What is disruptive innovation? *Harvard Business Review*, 93(12), 44–53.

Lewrick, M., Link, P., & Leifer, L. (2020). *The design thinking toolbox: A guide to mastering the most popular and valuable innovation methods*. Hoboken, NJ: Wiley.

Thaler, R. H., & Sunstein, C. R. (2021). *Nudge: Improving decisions about health, wealth, and happiness* (Updated ed.). New Haven, CT: Yale University Press.

UNIT- III

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). Thousand Oaks, CA: Sage Publications.

Martin, R. L. (2019). *The design of business: Why design thinking is the next competitive advantage*. Boston, MA: Harvard Business Review Press.

Singhal, A., & Papa, M. J. (2016). *Organizing for social change: A dialectic journey of theory and praxis*. New Delhi, India: Sage Publications.
(Message design, audience analysis, communication for change)

UNIT- IV

Melkote, S. R., & Steeves, H. L. (2015). *Communication for development: Theory and practice for empowerment and social justice* (2nd ed.). New Delhi, India: Sage Publications.

Rao, S. (2020). Traditional media, culture, and development communication in India. *Journal of Creative Communications*, 15(1), 21–35. https://doi.org/10.1177/0973258619892356

Singhal, A., Cody, M. J., Rogers, E. M., & Sabido, M. (Eds.). (2015). *Entertainment-education and social change: History, research, and practice*. New York, NY: Routledge.

Suggested Readings

- Jatana, A. (2023). My food, my health. Penguin Random House India.
- Penguin Random House India

- Vir, S. C. (Ed.). (2023). Child, adolescent and women nutrition in India: Public policies, programmes and progress. Routledge India.

- Yadav, P., & Gautam, M. (Eds.). (2025). Public health nutrition: Challenges and opportunities in the 21st century. Iterative International Publishers.
- IIP Books

- Narula, U. (2019). Healthcare communication in India. Har-Anand Publications.
- Bookswagon

- Pradhan, J. (Ed.). (2025). Nutrition and food security in India: Enriching the cycle of research, public policy and practice. Springer Nature

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

DISCIPLINE SPECIFIC ELECTIVE
SOCIAL ENTREPRENEURSHIP

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Social Entrepreneurship	4	3	1	0	As per admission requirements	

Learning Objectives

- To understand the core concepts, principles, and relevance of social entrepreneurship in developmental contexts.
- To analyze community problems and apply participatory communication approaches for designing social enterprise solutions.
- To develop practical skills in planning, implementing, and evaluating sustainable social enterprise models.

Learning Outcomes

The students would be able to:

- Demonstrate a comprehensive understanding of social entrepreneurship concepts, models, and global/national trends.
- Conduct problem analysis and needs assessment to formulate innovative social enterprise ideas addressing community issues.
- Design and implement communication and outreach strategies to engage beneficiaries, partners, and funders effectively.
- Prepare and present a detailed social enterprise project proposal including organizational structure, budgeting, marketing, and sustainability plan.

THEORY
(Credits 3; Hours 45)

UNIT I: Introduction to Social Entrepreneurship **10 Hours**

This unit provides foundational understanding of social entrepreneurship—its meaning, evolution, and relevance in the development sector. It covers differences between social, commercial, and non-profit models, along with global and Indian perspectives.

- Concept of Social entrepreneur & entrepreneurship –Need, Major Functions and Areas of Social Entrepreneurship.

- Evolution and historical development of social entrepreneurship globally.
- Role of social entrepreneurs as innovators and change agents.
- Significance of social entrepreneurship in India.
- Differences between social, commercial, and non-profit enterprise models.
- Overview of hybrid and mission-driven social enterprise models.

UNIT II: Innovation, Creativity, and Social Enterprise Design 10 Hours

This unit emphasizes the role of innovation and creativity in shaping effective social enterprises. Students learn approaches such as design thinking, human-centered design, frugal innovation, and community-based co-creation.

- Importance of innovation and creativity in developing impactful social enterprises.
- Frugal innovation and low-cost solution development for resource-limited settings.
- Human-centered design and community-driven innovation approaches.
- The social entrepreneurial ecosystem: institutions, markets, communities and environment
- Prototyping, testing, and improving solutions for sustainable and scalable social enterprise design.
- Social Entrepreneurial Role Models- Bunker Roy, Jeroo Billimoria, Anshu Gupta, Vijaya Mahajan, Azim Premji.

UNIT III: The Social Entrepreneurship Process 12 Hours

This unit introduces key models explaining how social entrepreneurship unfolds, including the Timmons Model, the PCDO Framework, the Case Model, and the Social Entrepreneurship Framework. It explores how opportunities emerge across the public, private, and voluntary sectors.

- The Timmons Model of the Entrepreneurship Process, The PCDO (The People, Context, Deal, and opportunity) frame work,
- The Case Model, The Social Entrepreneurship Frame work.
- Sources of Social Entrepreneurship -Public Sector, Private Sector, Voluntary Sector.
- Social Entrepreneurship in Practice: The Grameen Bank (GB), The Self Employment Women's Association (SEWA), Aravind Eye Hospital, Barefoot College, Bhartia Samruddhi Investment &Consulting Services (BASIX),Narayana Hrudayalaya Institute of Medical Sciences, Technology Informatics Design Endeavour (TIDE)

UNIT IV: Social Enterprise Project Development and Applications 13 Hours

The unit includes activities such as problem diagnosis, stakeholder consultations, pilot testing small interventions, and preparing a comprehensive social enterprise proposal.

- Identifying a community problem for social enterprise development.
- Feasibility & Viability Analysis

- Conducting stakeholder consultations to gather insights and validate needs.
- Developing solution ideas and selecting a feasible social enterprise model.
- Preparing components of a social enterprise proposal: value proposition, objectives, and target groups.
- Planning operational strategies, resource requirements, and budgeting.
- Pilot testing small-scale interventions and documenting findings.
- Designing an impact plan with indicators for monitoring and evaluation.
- Final preparation and presentation of a comprehensive social enterprise project proposal.

TUTORIAL
(Credits 1; Hours 15)

- Field-based identification of a community problem and documentation of needs.
- Stakeholder consultations and analysis to validate issues and explore opportunities.
- Application of design thinking and human-centered design to generate solution ideas.
- Development of a Social Business Model Canvas or social enterprise framework.
- Creation of basic prototypes or small-scale tests of proposed solutions.
- Compilation and presentation of a comprehensive social enterprise project proposal.

Essential Readings

UNIT- I

- Doherty, B., Meehan, J., & Meehan, B. (2024). *Management for social enterprise*. SAGE Publications.
- Bornstein, D., & Davis, S. (2016). *Social entrepreneurship: What everyone needs to know*. Oxford University Press.
- Datta, P. B., & Gailey, R. (2016). Empowering women through social entrepreneurship: Case study of a women's cooperative in India. *Entrepreneurship Theory and Practice, 36*(3), 569–587.

UNIT- II

- Mulgan, G. (2019). *Social innovation: How societies find the power to change*. Policy Press.
- Doherty, B., Haugh, H., & Lyon, F. (2016). Social enterprises as hybrid organizations: A review and research agenda. *International Journal of Management Reviews, 16*(4), 417–436. https://doi.org/10.1111/ijmr.12028
- Gupta, A. K. (2016). *Grassroots innovation: Minds on the margin are not marginal minds*. Penguin Random House India.

UNIT- III

- Dees, J. G., Emerson, J., & Economy, P. (2018). *Enterprising nonprofits: A toolkit for social entrepreneurs* (Rev. ed.). John Wiley & Sons.
- Mahajan, V. (2017). *Financing poor: Lessons from Indian experiences*. Sage Publications India.

UNIT- IV

- Doherty, B., Meehan, J., & Meehan, B. (2024). *Management for social enterprise*. SAGE Publications.
- British Council. (2016). *Social value economy: A survey of the social enterprise landscape in India*. British Council India.

Recommended Readings

- Deakins, D., & Scott, J. M. (2024). *Entrepreneurship: A contemporary and global approach* (2nd ed.). SAGE Publications.
- Haski-Leventhal, D. (2021). *Social entrepreneurship and innovation: International case studies and practice*. SAGE Publications.
- Kerlin, J. A. (Ed.). (2017). *Shaping social enterprise: Understanding institutional context and influence*. Emerald Publishing.
- Chandra, Y., & Shang, L. (2023). *Social entrepreneurship in Asia: Sustainability, innovation, and impact*. Routledge.
- Phillips, W., Lee, H., Ghobadian, A., O'Regan, N., & James, P. (2015). Social innovation and social entrepreneurship: A systematic review. *Group & Organization Management, 40*(3), 428–461.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
POVERTY, LIVELIHOOD SYSTEMS & SKILLING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Poverty, Livelihood Systems & Skilling	**4**	**3**	**1**	**0**	**As per admission requirements**	

Learning Objectives

1. To develop an advanced understanding of the concepts, theories and measures of poverty and well-being in both national and global contexts.
2. To examine various livelihood systems and frameworks, with emphasis on vulnerability, resilience, and institutional influences.
3. To analyse skilling ecosystems, labour-market dynamics and policy interventions that shape employability and sustainable livelihoods.
4. To build students' capacity to design, implement and evaluate poverty-reduction, livelihood and skilling programmes using research tools and evidence-based approaches.

Learning Outcomes

The students would be able to:

1. Critically evaluate different poverty frameworks and apply appropriate measurement tools to assess poverty and welfare conditions.
2. Analyse and interpret livelihood strategies using the Sustainable Livelihoods Framework**,** identifying factors that influence vulnerability and resilience.
3. Assess and compare skilling policies, training programmes and labour-market interventions**,** with the ability to identify gaps and propose improvements.
4. Develop a policy brief that integrates poverty analysis, livelihood systems and skilling strategies using relevant data and research methods.

THEORY
(Credits 3; Hours 45)

Unit 1: Understanding Poverty and Well-being — 9 Hours

This unit explores the conceptual foundations, determinants, patterns, and measurements of poverty and inequality. It encompasses global and national frameworks, multidimensional indicators, and socio-economic contexts that influence deprivation.

- Concepts of poverty: absolute, relative, chronic, and transient poverty
- Determinants of poverty and inequality: structural, demographic, and policy factors
- Approaches to poverty analysis: income-based, basic needs, social exclusion, capability approach
- Measurement tools: poverty lines, headcount ratio, poverty gap, MPI, vulnerability assessments
- Spatial and social dimensions of poverty: rural–urban differences, caste, gender, and regional variations
- Global and national poverty trends and policy debates

UNIT II: Livelihood Systems **13 Hours**

This unit provides an understanding of various livelihood systems that operate across rural and urban contexts. It examines the nature of formal and informal sector livelihoods, different types of traditional and modern livelihood options, and the role of farming, non-farm activities, and wage labour in sustaining households.

- Formal and Informal Sector Livelihoods – Nature, characteristics, and differences.
- Types of Livelihoods – Traditional, modern, and sustainable livelihood options.
- Farming and Allied Activities – Crop cultivation, livestock, fisheries, sericulture, and horticulture.
- Non-Farm Activities – Rural artisanship, small-scale manufacturing, and micro-enterprises.
- Wage Labour – Agricultural labour, construction work, and casual/seasonal employment.
- Forest-Based Livelihoods – Collection of NTFPs, timber, firewood, and other forest resources.
- Migration-Based Livelihoods – Seasonal/long-term migration and its impact on income and households.
- Rural and Urban Livelihoods – Characteristics, differences, and employment patterns.
- Socio-Economic Zones, Industrial Policies & Women's Livelihood Opportunities – SEZs, industrial policy impacts, and schemes promoting women's employment and entrepreneurship.

Unit III: Labour Markets & Employability **10 Hours**

This unit provides an understanding of labour market structures, workforce dynamics, and factors influencing employability in India. It examines the role of skills, technology, policies, and institutions in shaping employment opportunities. The unit also explores challenges, trends, and strategies for enhancing employability across sectors.

- Labour Market Structure and Characteristics – Formal vs. informal labour markets, workforce composition, demand–supply dynamics.
- Determinants of Employability – Skills, education, work experience, digital literacy, and soft skills.
- Technological Change and Future of Work – Impact of automation, AI, and digital transformation on employment patterns.
- Employment Policies and Labour Reforms – Key government initiatives, labour codes, and programmes promoting employment.
- Youth and Women Employability – Barriers, opportunities, career readiness, and inclusion strategies.
- Strategies for Enhancing Employability – Career guidance, vocational training, apprenticeships, industry linkages, and skill development initiatives.

Unit IV: Livelihood Interventions, Innovations, and Policy Frameworks 13 Hours

This unit provides an in-depth understanding of skilling frameworks, types and aspects of skill development, national skilling structures, and regulatory bodies in India.

- Livelihood promotion programmes in India: MGNREGA, NRLM, DAY-NULM, Start-Up India
- Financial inclusion and social protection mechanisms (Jan Dhan Yojana, SHGs, cooperatives)
- Innovations in livelihood development – FPOs, social enterprises, and digital platforms
- Linking livelihoods and skills to ESG, SDGs, and inclusive growth strategies
- Introduction to Skilling – Importance, relevance, and role of skills in employment and development.
- Types of Skilling – Technical/vocational skills, soft skills, life skills, digital skills, and entrepreneurial skills.
- National Skill Development Mission (NSDM) **–** Vision, objectives, institutional structure and components.
- Sector Skill Councils (SSCs) **–** Roles, industry partnership, National Occupational Standards (NOS) and Qualification Packs (QPs).
- NCVET & Regulatory Framework – Accreditation, quality assurance, certification standards in skilling ecosystem.
- AI for Skilling and Training Delivery – Use of AI tools for personalized learning, digital simulations, and adaptive training modules.

TUTORIAL
(Credits 1; Hours 15)

- Review two national or international skilling programmes and compare their design, accreditation models and outcomes.
- Conduct a livelihood analysis for a selected community/occupational group using the Sustainable Livelihoods Framework (SLF).
- PRA-based activities such as asset mapping, seasonal calendars (simulation exercises).
- Interview with a small-scale or informal worker, a short report identifying key needs, potential skill gaps, and suggest feasible employment or skilling opportunities that could enhance their livelihood.

Essential Readings

UNIT- I

- Alkire, S., Kanagaratnam, U., & Suppa, N. (2018). The global Multidimensional Poverty Index (MPI): 2018 revision. *World Development, 103*, 93–115. https://doi.org/10.1016/j.worlddev.2017.10.026
- Sen, A. (2017). *Collective choice and social welfare* (Expanded ed.). Harvard University Press.
- Government of India. (2022). *National Multidimensional Poverty Index: A progress review*. NITI Aayog.
- World Bank. (2022). *Poverty and shared prosperity 2022: Correcting course*. World Bank Publications.

UNIT- II

- Ellis, F., & Freeman, H. A. (2016). *Rural livelihoods and poverty reduction policies*. Routledge.
- Rao, N., & Raju, S. (2020). Gendered livelihoods and household well-being in India. *World Development, 127*, 104739. https://doi.org/10.1016/j.worlddev.2019.104739
- Government of India. (2021). *Situation assessment of agricultural households and land and livestock holdings of households in rural India*. National Statistical Office.

UNIT- III

- Mehrotra, S., & Parida, J. K. (2019). India's employment crisis: Rising education levels and falling non-farm employment. *Development and Change, 50*(4), 1157–1184. https://doi.org/10.1111/dech.12515
- Papola, T. S., & Sahu, P. P. (2020). *Labour markets in India: Issues and perspectives*. Springer India.
- International Labour Organization. (2020). *India employment report: Youth employment and skill development*. ILO.

UNIT -IV

- Government of India. (2023). *Skill India digital ecosystem and AI integration framework*. Ministry of Skill Development and Entrepreneurship.
- Kumar, R., & Chattopadhyay, S. (2017). Financial inclusion, SHGs, and women's livelihoods in India. *Journal of Rural Development, 36*(2), 179–198.

Suggested Readings

- Jha, S. (2018). *Informal Sector and Urban Livelihoods in India*. Routledge.
- ILO. (2016). *Skills for Employment Policy Briefs.* Geneva: International Labour Organization.
- NITI Aayog. (2018). *Skill India: Policies, Progress and Case Studies*. Government of India.
- Krishnaswamy, K. & Shekhar, R. (2019). *Labour Markets in India: Issues and Perspectives*. Oxford University Press.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

CIVIL SOCIETY AND VOLUNTEER MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Civil Society and Volunteer Management	**4**	**3**	**1**	**0**	**As per admission requirements**	

Learning Objectives

1. To understand the evolution, concepts, and structures of civil society and its interactions with the state and market.
2. To analyse the role of CSOs in development, democracy, accountability, and governance.
3. To examine the principles, motivations, and management strategies of volunteerism across different contexts.
4. To explore methods for strengthening CSOs through capacity building, partnerships, innovation, and effective monitoring and evaluation.

Learning Outcomes

The students would be able to:

1. Explain key concepts of civil society and assess the functions and relationships of CSOs in contemporary society.
2. Critically evaluate how CSOs contribute to development, governance, advocacy, and social accountability.
3. Apply volunteer management principles to design and support effective volunteer engagement within CSOs.
4. Assess CSO performance using monitoring and evaluation frameworks and identify strategies to enhance organizational impact and sustainability.

THEORY

(Credits 3; Hours 45)

UNIT I: Civil Society – Meaning, Origins and Interpretation **10 Hours**

This unit introduces the foundations of civil society, tracing its historical evolution, conceptual interpretations, and structural forms. It examines how civil society organizations (CSOs) function, the nature of their engagement with the state and market, and the role of Corporate Social Responsibility (CSR) in development partnerships.

- Meaning, concept, and evolution of civil society; historical & contemporary perspectives
- Types, structure, and functioning of CSOs
- Corporate Social Responsibility: concept, importance, dimensions, and development partnerships
- Relationships and partnerships between CSOs, government, and other stakeholders

UNIT II: Civil Society, Development, and Democracy **12 Hours**

This unit explores the relationship between civil society and democratic governance. It covers ideological, socio-economic, and legal dimensions, along with the role of CSOs in people's movements, transparency, and accountability. It also assesses how globalization reshapes civil society structures and functions.

- Ideological, social, economic, and legal perspectives of civil society
- CSOs, people's movements, and the state
- Governance challenges in CSOs: accountability, transparency, and ethics
- Civil society's contributions to democracy and good governance
- Globalization and its impact on civil society

UNIT III: Volunteerism and Volunteer Management 12 Hours

This unit focuses on the concept, context, and practice of volunteerism. It unpacks types of volunteers, motivational drivers, and ethical considerations. Students learn the principles and strategies of volunteer management, planning volunteer roles, and aligning them with CSO needs.

- Concept, meaning, and context of volunteerism
- Types of volunteers: youth, community, corporate, digital/virtual
- Motivation, benefits, ethics, and determinants of volunteer engagement
- Volunteer management models, strategies, and organizational planning
- Volunteering as social exchange; volunteering on boards
- Resource mobilization and fundraising involving volunteers

UNIT IV: Strengthening Civil Society and Future Trends 11 Hours

This unit addresses strategies for enhancing CSO effectiveness through capacity building, advocacy, partnerships, and innovation. It also covers monitoring and evaluation practices, technology-enabled interventions, and emerging trends in civil society and volunteerism.

- Capacity building: leadership, governance, and institutional development
- Advocacy, communication, and networking strategies
- Monitoring, evaluation, and impact assessment of CSO initiatives
- Innovation in civil society: social entrepreneurship and digital platforms
- Future trends: digital civil society, hybrid/gig volunteering, sustainability and regulatory challenges

TUTORIAL
(Credits1;Hours 15)

- Map and profile a CSO based on its mission, structure, and stakeholders.
- Review a CSR project to understand partnerships and development strategies.
- Analyse a case study of an Indian people's movement and its civil society role.
- Prepare a transparency and accountability assessment checklist for a CSO.
- Conduct a short volunteer motivation survey among youth or community members.
- Design a volunteer management plan including recruitment, orientation, and retention.
- Create a brief fundraising or resource-mobilization activity involving volunteers.
- Prepare an advocacy or digital communication campaign on a selected social issue.

Essential Readings:

UNIT- I

- Tandon, R., & Mohanty, R. (2016). *Civil society and governance in India*. SAGE Publications India.
- Kumar, A. (2017). Civil society in India: Evolution, role, and challenges. *Indian Journal of Public Administration, 63*(2), 223–238.
- Government of India. (2021). *National voluntary guidelines on social, environmental and economic responsibilities of business*. Ministry of Corporate Affairs.

UNIT- II

- Tandon, R. (2016). *Democracy, civil society, and governance*. Routledge India.
- Jayal, N. G. (2017). *Citizenship and its discontents: An Indian history*. Harvard University Press.
- Kabeer, N., & Sanyal, P. (2018). NGOs, civil society, and development accountability. *World Development, 105*, 1–14. https://doi.org/10.1016/j.worlddev.2017.12.007

UNIT- III

- Piatak, J. S., & Sowa, J. E. (2024). *Volunteer management: A strategic approach*. Routledge.
- Bano, M. (2018). Volunteering and social action in India: Trends and motivations. *Nonprofit Policy Forum, 9*(3), 1–18. https://doi.org/10.1515/npf-2017-0040
- United Nations Volunteers. (2018). *State of the world's volunteerism report: The thread that binds*. UNV.

UNIT- IV

- Anheier, H. K., Krlev, G., & Preuss, S. (2017). Social innovation as impact-driven change. *Stanford Social Innovation Review, 15*(2), 42–47.
- Tandon, R., & Brown, L. D. (2018). *Civil society organizations and the state: Governance, accountability and innovation*. Routledge.
- World Economic Forum. (2023). *Digital transformation of civil society*. WEF.

Suggested Readings:

- Anheier, H. K., & Toepler, S. (2023). *Nonprofit organizations: Theory, management, policy* (4th ed.). Routledge.
- Brudney, J. L. (2016). Designing and managing volunteer programs. In D. O. Renz (Ed.), *The Jossey-Bass handbook of nonprofit leadership and management* (pp. xx–xx). John Wiley & Sons. (*Add page numbers if known.*)
- Connors, T. D. (1995). *The nonprofit management handbook: Planning and leading the nonprofit organization*. John Wiley & Sons.
- Rochester, C. (1999). One size does not fit all: Four models of involving volunteers in small organizations. *Voluntary Action, 1*(2), 7–20.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

COMMUNITY ORGANIZATION; SOCIAL POLICY AND DEVELOPMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Community Organization; Social Policy and Development	4	3	1	0	As per admission requirements	

Learning Objectives

1. To understand the organization and structure of different types of communities and the dynamics of social change.
2. To study the theoretical and practical inquiry in the field of Social Policy and Planned interventions.
3. To critically analyze contemporary social policies in developed and developing countries.

Learning Outcomes

The students would be able to:

1. Understand the key concepts and perspectives related to community, social structure and social systems
2. Familiarize with the elements and theories of community relationship development, community organization and their mobilization for development goals
3. Gain insight into the development of social policies and planned interventions and their impact on the social and administrative organization of developed and developing countries.
4. Recognise the diversity of human needs and societal responses to social injustice and disadvantage

THEORY

(Credits 3; Hours 45)

UNIT I: Concept of community, community structures and Community Organization 10 Hours

- Concept of Community : Traditional and modern, Characteristics of Community Sociological thoughts on community- Marx, Durkheim, Gandhi, Tagore and others
- Types of communities- Tribal, Rural and Urban and changing norms and customs
- Concept of Community Organization, Need, Importance
- Principles and new ways of community organization, Indian and International
- Relationship of community organization and community development, Approaches and goals of community development-Welfare to rights based approaches
- Theoretical orientation of communities- Functionalism, Structuralism, Social Action theory, Conflict

theory

- Types of Community organizations : Collectives, Cooperatives, Civil society groups, Community Based Organsations (CBOs) and their roles in mobilizing people and influencing outcomes –(select case studies)
- Care and welfare systems in communities: mechanisms and institutions

UNIT II: People's Participation & Dynamics of Change in Community 10 Hours

- Scope, and Levels of people's participation for change
- Stakeholder's participation analysis in development programmes and initiatives- select case studies
- People's movements : Issues, processes and outcomes in relation to Gender, Environment, Employment, Governance, Sustainable consumption and others.
- Role of Mass Media and ICTs in community based change.

UNIT III: Development & Indian Economic Environment 15 Hours

- Meaning and concept of growth, development and sustainable development, Challenges of sustainable development -local, national and global linkages
- Indicators of development, Characteristics of less developed countries and SDGs
- Poverty & issues of inequality, inequity and vulnerability ; illiteracy and Unemployment ; Urbanisation and Migration
- Population Demographics & Transition
- Urban and rural Livelihood issues-Indian agriculture- status, prospects and challenges; Agricultural policy;
- New Economic Policy, Industrialisation, Liberalization and Globalisation
- International protocols and agreements and their impact on Indian population
- Panchayti Raj Institutions and Democratic Governance

UNIT IV: Social Policy & Planning: Approaches and Perspectives 10 Hours

- History and trajectory of social policy and social planning in selected developed and developing countries,
- Social policy in India - Health care, Education, Housing, Employment and Welfare and Social security.
- Social policy and planning- Issues of capacity, accountability, transparency and their relationship to beneficiary publics and the state.
- Community participation in social policy and policy changes

TUTORIAL
(Credits 1; Hours 15)

- Orientation to community and community organizations
- Rapport Formation, Skills and methods of community contact
- Community mobilization techniques
- Participatory Techniques and People's participation
- Using PLA in community (Time based, space based and relation based methods)
- Analysis of Community Issues
- Need Assessment

- Key dimensions of issue in community, community groups and other stakeholders involved.
- Developing a plan for addressing community issues
- Critical analysis of social policy and programme and it's implementation and impact at the grassroot level.

Essential Readings:

UNIT- I

- Manohar, S., & Rao, M. S. A. (2016). *Indian society: Themes and perspectives*. New Delhi, India: Oxford University Press.
- Midgley, J. (2017). *Social development: Theory and practice*. Thousand Oaks, CA: Sage Publications.
- Singh, K. (2016). *Community development: Principles and practices*. New Delhi, India: Sage Publications.

UNIT- II

- Arnstein, S. R. (2019). A ladder of citizen participation revisited. *Journal of the American Planning*
- Cornwall, A. (2016). *Participation in development: Theory and practice*. New York, NY: Routledge.
- Manyozo, L. (2017). *Media, communication and development: Three approaches*. New Delhi, India: Sage Publications.
- Shah, G. (2018). *Social movements in India: A review of literature*. New Delhi, India: Sage Publications.

UNIT- III

- Government of India. (2019). *NITI Aayog: Strategy for New India @75*. New Delhi, India: Government of India.
- Kabeer, N. (2016). *Gender, labour markets and inclusive growth*. New Delhi, India: Sage Publications.

UNIT- IV

- Deacon, B. (2017). *Global social policy and governance*. London, UK: Sage Publications.

Suggested Readings:

- Hall, A., Midgley, J., & Wright, S. (2019). *Social policy for development*. Thousand Oaks, CA: Sage Publications.
- Midgley, J., & Conley, A. (2017). *Social work and social development: Theories and skills for developmental social work*. New York, NY: Oxford University Press.

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

DESCIPLINE SPECIFIC CORE
CLIMATE CHANGE, GREEN TECHNOLOGIES AND ENVIRONMENT ACTION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Climate Change, Green Technologies And Environment Action	4	3	-	1	As per admission requirements	Nil

Learning Objectives

- To understand the fundamentals of climate change
- To analyze the impacts of climate change and extremes on different sectors and identify strategies for climate change mitigation, adaptation.
- To examine national and international climate policies for combating climate change

Learning Outcomes

The students would be able to:

- Understand of strategies to mitigate and adapt to climate change at multiple scales
- Analyze climate change challenges and identify practical and sustainable solutions to enhance climatic resilience.
- Identify and evaluate green technologies for sustainable production

THEORY
(Credits 3; Hours 45)

UNIT I: Introduction to Climate Change **8 Hours**

This unit presents an overview of the concept, importance, and origins of climate change. It examines the evidence of climate change, investigates climate modeling and forecasts utilizing and addresses approaches for mitigation and adaptation.

- Climate change: Concept, significance and causes
- Natural vs. anthropogenic climate change
- Evidence of climate change: temperature records, extreme weather events (Floods, droughts, Sea Rise, heatwaves etc)

- Climate modeling and projections: CMIP & RCP (Representative Concentration Pathways)
- Climate change mitigation and adaptation
- Interlinkages between climate change and SDGs.

Unit II: Impacts of Climate Change **10 Hours**

This unit explores the extensive effects of climate change on different sectors Additionally, it focuses on the gendered and social aspects of climate change, focusing on vulnerability and resilience.

- Impact on Atmospheric and Climate System: Rising temperatures, altered rainfall, and increased intensity and frequency of extreme events.
- Impact of water resources: Water scarcity, depleting quality of water
- Impact on Agriculture and Food Security: Reduced agricultural productivity, and food security.
- Impacts on Human Health risks, economic losses, and increased migration and social stress. Impact on Urban System: heat islands, infrastructure damage, and flooding.
- Gendered impacts of climate change: Disproportionate effects on health, livelihoods, safety, and access to resources, particularly for women and marginalized groups.

Unit III: National and International initiatives to combat climate change **13 Hours**

This unit explores both global and national initiatives aimed at combating climate change, Additionally, it discusses national strategies including India's National Action Plan on Climate Change (NAPCC) and its associated missions, state-level action plans, and programs designed to promote conservation and clean technology.

International Initiatives:

- United Nations Framework Convention on Climate Change (UNFCCC)
- Kyoto Protocol and Clean Development Mechanism (CDM)
- Paris Agreement and Nationally Determined Contributions (NDCs)
- Intergovernmental Panel on Climate Change (IPCC)
- Global Climate Funds: Green Climate Fund (GCF), Adaptation Fund
- National Action Plan on Climate Change (NAPCC) and its eight missions: National Solar Mission, (National Mission for Enhanced Energy Efficiency, National Mission on Sustainable Habitat, National Water Mission, National Mission for Sustaining the Himalayan Ecosystem, National Mission for a Green India, National Mission for Sustainable Agriculture and National Mission on Strategic Knowledge for Climate Change)
- State Action Plans on Climate Change (SAPCCs)
- Renewable energy policies and promotion of clean technologies
- National Electric Mobility Mission, energy conservation standards
- Climate-resilient agriculture and water management programs
- Policies for afforestation, biodiversity conservation, and carbon markets

UNIT IV: Climate Change and Green Technology **14 Hours**

This introduces the concept and principles of green technology and its role in low-carbon development. It covers renewable energy systems, energy-efficient designs, sustainable agriculture, water conservation, waste management, and pollution reduction technologies.

- Concept, scope, and principles of green technology and low-carbon development.
- Renewable energy technologies: solar, wind, biomass, and small-scale hydropower.
- Energy-efficient technologies: LED systems, improved cookstoves, smart grids, and green buildings.
- Sustainable agriculture technologies: drip irrigation, precision farming, vertical farming, and organic inputs.
- Water conservation technologies: rainwater harvesting, greywater recycling, and micro-irrigation systems.
- Waste management technologies: composting, biogas plants, waste-to-energy systems, and recycling innovations.
- Pollution reduction technologies: air and water purification systems, clean production methods.
- Emerging green innovations: electric mobility, circular economy solutions, and climate-smart digital tools. Climate-smart agriculture technologies, Green finance & carbon markets and Innovations in sustainable materials

PRACTICAL
(Credits 1; Hours 30)

- Measure individual or household carbon footprints using online calculators.
- To visit a community and identify coping strategies of vulnerable section of society to climatic stresses
- Identify major emission sources and suggest practical mitigation strategies. Compare footprints before and after implementing low-carbon practices .
- Review of Climate change and sustainable development related data sources: Indices: Living planet index (LPI), Happy Planet Index (HPI). Sustainable Development Goal Index (SDGI)

Essential Readings

UNIT- I

- Intergovernmental Panel on Climate Change. (2021). *Climate change 2021: The physical science basis*. Cambridge University Press. https://doi.org/10.1017/9781009157896
- Mukherjee, S., & Chakraborty, I. (2021). *Climate change and sustainable resource management*. Springer.

UNIT- II

- Intergovernmental Panel on Climate Change. (2022). *Climate change 2022: Impacts, adaptation and vulnerability*. Cambridge University Press. https://doi.org/10.1017/9781009325844

- Rao, N., Lawson, E. T., Raditloaneng, W. N., Solomon, D., & Angula, M. N. (2019). Gendered vulnerabilities to climate change. *World Development, 122*, 85–97. https://doi.org/10.1016/j.worlddev.2019.05.006

UNIT- III

- United Nations Framework Convention on Climate Change. (2015). *Paris Agreement*. UNFCCC.
- Government of India. (2021). *India's long-term low emissions development strategy*. Ministry of Environment, Forest and Climate Change.
- Government of India. (2022). *National Action Plan on Climate Change (Updated framework)*. MoEFCC.

UNIT- IV

- Ahuja, D. (2021). *Green technologies for sustainable development*. SAGE Publications India.
- Kumar, A., & Sharma, M. P. (2017). Biomass energy technologies in India. *Renewable and Sustainable Energy Reviews, 70*, 24–39. https://doi.org/10.1016/j.rser.2016.11.073
- Mukherjee, S., & Chakraborty, I. (2022). Green finance and carbon markets in emerging economies. *Journal of Sustainable Finance & Investment, 12*(3), 741–758. https://doi.org/10.1080/20430795.2021.1880214

Recommended Readings

- Richardson, K., Steffen, W., & Liverman, D. (2020). *Climate change: Global risks, challenges, and decisions*. Cambridge University Press.
- Kaushik, C. P., & Kaushik, A. (2019). *Perspectives in environmental studies* (6th ed.). New Age International Publishers.
- Kumar, P. (Ed.). (2022). *Climate change and environmental sustainability*. Springer.
- Singh, R. B., & Hietala, R. (Eds.). (2021). *Climate change and sustainable development: India and global perspectives*. Springer.

- Swarup, D., & Roy, D. (2019). *Environment and climate change: Emerging issues and policy options*. Oxford University Press.
- United Nations Environment Programme (UNEP). (2021). *Green technology innovations for sustainable development*. UNEP Publications.

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

DISCIPLINE SPECIFIC CORE

COMMUNICATION FOR NUTRITION, HEALTH & WELL-BEING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Communication For Nutrition, Health & Well-Being	**4**	**2**	**0**	**2**	**As per admission requirements**	**Should be aware of basic concepts related to health & nutrition and communication fundamentals**

Learning Objectives

1. To develop an understanding of correlations between Nutrition, Health & Well-being
2. To comprehend the multi-dimensional nature of nutrition, health and well-being
3. To effectively understand communication fundamentals for communicating about Nutrition, Health & Well-being in diverse contexts

Learning Outcomes

The students would be able to:

1. Develop an understanding of correlations between Nutrition, Health & Well-being
2. Comprehend the multi-dimensional nature of nutrition, health and well-being
3. Understand communication fundamentals for communicating about Nutrition, Health & Well-being in diverse contexts
4. Develop IEC and other communication tools for Nutrition, Health & Well-being

THEORY
(Credits 2, Hours 30)

UNIT I: Nutrition & Development 8 Hours

This unit underpins on the correlation between nutrition, health and development.

- Relationship between Nutrition, Health and Well-being
- Concepts of Community and Public Nutrition, Importance and Challenges for interventions
- Assessment of Nutritional Status – focus on Children, Adolescents and Women
- Public Health Aspects of Malnutrition- Life cycle approach to understand the nutritional requirements and causes and consequences of Micro and Macro nutrient deficiencies

- Public Health Aspects of Lifestyle Related Disorders (Obesity, Hypertension, Coronary heart disease, Diabetes, Cancer, HIV/ AIDS)- Awareness building to service delivery
- Nutrition support programmes and initiatives, POSHAN Abhiyan, ICDS, National Nutrition Mission and Role of Community led and Communication based efforts
- Behaviour change initiatives for improving nutrition indicators –selected case studies

UNIT II: Health & Development **12 Hours**

This unit describes the multi-dimensional nature of health and its contextual underpinnings

- Intrinsic linkage between health and development.
- Public and Global health, Epidemiology, Preventive and promotive health.
- Concept of Community and Public health and Challenges of access and quality of health services
- Social Determinants of health
- Health care issues across life cycle- children, adolescents, men, women and the elderly
- Reproductive and Mother and Child health: Challenges and efforts made for improving Reproductive and Mother and Child health - Global, National, State and Local (selected case – studies), Government Reproductive and Child Health Programmes - Hierarchy of Indian Public Health System for RCH
- Review of NHM, JSY, JSSK and appraisal of interpersonal communication in health, role of triple A (ASHA, ANM and AWW)
- Communitization of health- Role of VHSNCs, VHSNDs in influencing health services delivery and health outcomes
- Health Economics- Health Budgeting & Expenditure on public health
- Health Insurance & OOPE
- Environment and health- Pollution, toxicity, quality, contaminations, residues and adulteration issues –prevalence, health implications.
- Health issues during disaster and emergencies and special circumstances- Relief and rehabilitation strategies.

UNIT III: Well-being & Development **4 Hours**

This unit explores the continuum of wellness and its interrelationship with nutrition, health and development

- Concepts & determinants of Well-Being: Physical, mental, social, emotional, and spiritual well-being; WHO and SDG perspectives.
- Theoretical Foundations: Positive psychology, PERMA model, salutogenesis, and socio-ecological approaches, Social Cognitive Theory to promote healthy lifestyles and resilience.
- Mental Health & Emotional Well-Being: Stigma reduction, stress management, youth and workplace well-being communication.
- Community Well-Being Approaches: Participatory communication, social support systems, and culturally rooted well-being practices.
- Yoga, Ayurveda, Psychotherapy and mHealth Tools

UNIT IV: Communication for Nutrition, Health & Well-being **6 Hours**

This unit explores the areas and potential of SBC applications.

- Health communication: Indian and Global Perspectives, Challenges of health Communication
- Health Communication and BCC- Meaning, concept, various strategies, types.
- Strategizing health advocacy and SBCC campaigns- elements, tools and techniques

- Role of media in promoting health
- Social marketing, participatory training and campaigns of health communication.
- Innovative Approaches in Health, Nutrition & Well-being Communication: Entertainment Education
- Incentives for Health Communication and Positive Deviance Approach

PRACTICAL

(Credits 2; Hours 60)

- Analysis of data sources related to Nutrition, Health & Well-being
- Critical Analysis of SBC Nutrition, Health & Well-being Campaigns
- Visit to PHC/Government Facility and interaction with Health Workers
- Design of campaign on health/nutrition/well-being
- IEC material design & Evaluation
- Diet & Well-Being Assessment Activity
- Myth-Busting & Misinformation Audit
- Reviewing or designing simple mHealth tools
- Reflection & Behaviour-Tracking Journal
- Podcast or Short Audio Capsule
- Most Significant Change Technique

Essential Readings:

UNIT- I

- National Institute of Nutrition. (2020). *Dietary guidelines for Indians* (2nd ed.). Indian Council of Medical Research.
- Ruel, M. T., Alderman, H., & Maternal and Child Nutrition Study Group. (2017). Nutrition-sensitive interventions and programmes. *The Lancet, 382*(9891), 536–551. https://doi.org/10.1016/S0140-6736(13)60843-0
- Government of India. (2018). *POSHAN Abhiyaan: National Nutrition Mission operational guidelines*. Ministry of Women and Child Development.

UNIT- II

- World Health Organization. (2016). *Health in all policies (HiAP) framework for country action*. WHO.
- Baru, R., Acharya, A., Acharya, S., Kumar, A. S., & Nagaraj, K. (2019). Inequities in access to health services in India. *Economic and Political Weekly, 54*(12), 38–45.
- Government of India. (2021). *National Health Policy and National Health Mission: Progress and challenges*. Ministry of Health and Family Welfare.

UNIT- III

- World Health Organization. (2018). *Well-being measures in primary health care*. WHO Regional Office for Europe.

- Diener, E., Oishi, S., & Tay, L. (2018). Advances in subjective well-being research. *Nature Human Behaviour, 2*, 253–260. https://doi.org/10.1038/s41562-018-0307-6
- Chandramouli, C., & Murthy, P. (2019). Mental health and well-being in India. *Indian Journal of Psychiatry, 61*(Suppl 4), S741–S747. https://doi.org/10.4103/psychiatry.IndianJPsychiatry_516_18

UNIT- IV

- Singhal, A., & Rogers, E. M. (2017). *Entertainment-education: A communication strategy for social*
- Govt. of India. (2020). *Behaviour change communication strategy under POSHAN Abhiyaan*. Ministry of Women and Child Development.
- Nair, N., Tripathy, P., Sachdev, H. S., Pradhan, H., & Costello, A. (2016). Participatory women's groups and health communication in India. *The Lancet Global Health, 4*(2), e119–e127. https://doi.org/10.1016/S2214-109X(15)00274-9

Suggested Readings:

- Jatana, A. (2023). My food, my health. Penguin Random House India.
- Penguin Random House India

- Vir, S. C. (Ed.). (2023). Child, adolescent and women nutrition in India: Public policies, programmes and progress. Routledge India.

- Yadav, P., & Gautam, M. (Eds.). (2025). Public health nutrition: Challenges and opportunities in the 21st century. Iterative International Publishers.
- IIP Books

- Narula, U. (2019). Healthcare communication in India. Har-Anand Publications.
- Bookswagon

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

DISCIPLINE SPECIFIC ELECTIVE

RURAL MARKETING AND DEVELOPMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Rural Marketing & Development	4	3	1	0	As per admission requirements	Should be aware of nature of rural communities and basics of marketing

Learning Objectives

- To understand the structure, behavior, and dynamics of rural markets within the broader context of rural development in India.
- To appreciate the marketing mix strategies, research tools, and communication approaches suitable for rural consumers and distribution environments.
- To analyze rural development programmes, innovations, and market linkages to evaluate their contribution to inclusive growth and sustainable livelihoods.

Learning Outcomes

The students will be able to:

- Critically assess rural consumer behavior and market characteristics using socio-economic and cultural frameworks.
- Design and evaluate marketing strategies and communication plans tailored to rural market needs and media environments.
- Examine and interpret rural development initiatives, value chains, and institutional mechanisms that influence rural markets.
- Propose innovative, sustainable, and technology-driven solutions to strengthen rural market systems and enhance rural livelihoods.

THEORY

(Credits 3; Hours 45)

Unit I: Understanding Rural Markets **12 Hours**

This unit introduces the concept, structure, and characteristics of rural markets in India. It explores rural consumers, demand patterns, and socio-cultural factors influencing purchase behavior.

- Rural Marketing Environment: Evolution, Nature and scope
- Structure of rural economy and market linkages
- Rural Consumer Behavior: Demographic and socio-economic profiles of rural consumers, income sources and expenditure patterns, demand patterns and consumption behavior, Household decision-making and cultural influences
- Segmenting, Targeting & Positioning in Rural Markets
- Rural market trends: digitalization, migration, remittances, Rural supply chains and distribution challenges
- Role of local markets (haats, melas) in rural commerce

Unit II: Rural Markets: The Marketing Mix **12 Hours**

This unit focuses on 4Ps of the marketing mix in the context of the rural markets. It also throws light on rural marketing research process, tools and ethics.

- Product: Concept, classification, decisions
- Pricing: Pricing Basics and Strategies for rural markets
- Place: Rural distribution systems and last-mile delivery models, Channel Dynamics and behavior
- Promotion: Role of digital, social, and mobile technologies in rural marketing
- Rural media landscape: radio, folk media, community platforms
- Social marketing and behavior change communication in rural areas
- Rural Marketing Research: Process, Tools & Ethics
- Corporate initiatives and CSR in rural markets
- Case studies on rural marketing (HUL, ITC e-Choupal, Tata, Amul)

Unit III: Rural Development and Market Linkages **11Hours**

This unit examines how rural development policies, institutions, and livelihood programmes shape rural markets, enabling income generation and economic participation.

- Rural development: concepts, objectives, and approaches
- Government schemes and institutions (NRLM, PMAY, MGNREGS, SHGs)
- Role of Panchayati Raj Institutions (PRIs) in local markets
- Agricultural development and its impact on rural markets
- Non-farm sector and rural enterprises
- Market linkages for farmers and producer groups
- Cooperatives, FPOs, and rural entrepreneurship
- Role of microfinance, credit institutions, and rural banks

- Value chain development in agriculture and rural products
- Case studies of successful rural development interventions

Unit IV: Innovations, Sustainable Development & Future of Rural Markets 10 Hours

This unit explores emerging innovations, sustainability pathways, and the future landscape of rural markets, emphasizing resilience and inclusive growth.

- Innovations in rural marketing (fintech, agritech, digital marketplaces)
- Sustainable rural development and green marketing
- Climate change impacts on rural markets and livelihoods
- E-commerce penetration and digital rural platforms
- Social enterprises and inclusive business models
- Public–private partnerships in rural development
- Rural tourism, crafts, and cultural industries
- Entrepreneurship development and start-up ecosystems
- Monitoring and evaluating rural market interventions
- Future trends: AI, smart villages, rural data systems

TUTORIAL
(Credits 1; Hours 15)

- Market Survey & Consumer Profiling
- Designing a Rural Communication Campaign
- Product Adaptation for Rural Markets
- Mapping a Rural Distribution Channel
- Rapid Market Assessment (Desk or Field-Based)
- Analysis of Government Programs Impacting Rural Markets
- Field Visit / Virtual Exposure Module
- Analysis of a Rural Marketing Case Study

Essential Readings

UNIT- I

- Kashyap, P., & Raut, S. (2022). *The rural marketing: Text and cases* (3rd ed.). SAGE Publications India.
- Government of India. (2021). *Situation assessment of agricultural households and rural consumption expenditure*. National Statistical Office, Ministry of Statistics and Programme Implementation.

UNIT- II

- Kashyap, P. (2019). Rural marketing strategies: Product, pricing, promotion and distribution challenges. *Journal of Business Research, 99*, 459–466. https://doi.org/10.1016/j.jbusres.2017.07.005
- Kotler, P., Kartajaya, H., & Setiawan, I. (2021). *Marketing 5.0: Technology for humanity*. Wiley.
- Government of India. (2020). *CSR and corporate engagement in rural development*. Ministry of Corporate Affairs.

UNIT- III

- Singh, S., & Singh, T. (2020). Farmer Producer Organizations in India: Linking farmers to markets. *Agricultural Economics Research Review, 33*(1), 1–14.
- Reddy, A. A., & Dev, S. M. (2019). Rural non-farm sector and employment diversification in India. *Indian Journal of Labour Economics, 62*(3), 437–456.
- Government of India. (2022). *National Rural Livelihoods Mission: Annual report*. Ministry of Rural Development.

UNIT- IV

- Prahalad, C. K. (2020). *The fortune at the bottom of the pyramid: Eradicating poverty through profits* (5th ed.). Pearson.
- Agarwal, A., & Brem, A. (2020). Strategic business transformation through technology in rural markets. *Technological Forecasting and Social Change, 155*, 119968. https://doi.org/10.1016/j.techfore.2020.119968
- Bairagi, S., & Fenton, J. (2021). Digital platforms and rural market transformation in India. *Information Technology for Development, 27*(3), 474–492.

Suggested Readings

- Krishnamacharyulu, C. S. G., & Ramakrishnan, L. (2019). *Rural marketing: Text and cases* (3rd ed.). Pearson.
- Venkatesh, P., & Suresh, P. (2021). *Rural economics*. Sage Publications India.
- Singh, G., & Pandey, A. (2022). *Rural development: Principles, policies, and management* (4th ed.). Sage Publications India.
- Neuwirth, R. (2017). *Stealth of nations: The global rise of the informal economy*. Anchor Books.
- Ray, G. L., & Mondol, S. (2022). *Research methods in extension education and social sciences* (2nd ed.). Kalyani Publishers.
- World Bank. (2020). *World development report 2020: Trading for development in the age of global value chains*. World Bank Publications

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

DISCIPLINE SPECIFIC ELECTIVE
PUBLIC ADMINISTRATION AND GOVERNANCE

.

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Public Administration and Governance	**4**	**3**	**1**	**0**	**As per admission requirements**	**Complete Undergraduate course**

Learning Objectives:

1. To understand the evolution, structure, and values of the Indian Public Administration system.
2. To analyse the ecosystem of governance, public policy, and accountability mechanisms in India.
3. To examine the integral role of communication in development administration and governance.
4. To develop skills for designing and evaluating effective communication strategies for public schemes and governance initiatives.

Learning Outcomes:

The student would be able to:

1. Explain the structure, evolution, and core principles of public administration in India.
2. Critically assess the roles of key institutions and accountability frameworks in Indian governance.
3. Analyse the interplay between communication, public policy, and development outcomes in the Indian context.
4. Apply practical tools for policy analysis, communication strategy design, and program evaluation relevant to the public sector.

THEORY
(Credits 3; Hours 45)

UNIT I: Indian Public Administration: Evolution, Structure, and Values 10 Hours

This unit introduces the foundations of the Indian administrative system, tracing its historical evolution and constitutional framework. It examines the structure of services and the core values of public service in India.

- Meaning, nature, scope, and significance of Public Administration
- Evolution of Public Administration in India
- The Constitutional Framework: Union, State, and Concurrent Responsibilities
- The Steel Frame: Structure and Role of All India Services (IAS, IPS, IFS) and other Central Services
- Foundational Values: Constitutional values, Ethical and Moral values, Professional values
- Sardar Patel's Vision, Code of Conduct, and Probity in Public Life

UNIT II: The Indian Governance Ecosystem: Institutions, Policy, and Accountability15 Hours

This unit explores the framework of governance in India, covering key institutions, the public policy process, decentralized governance, and mechanisms ensuring transparency and accountability.

- Conceptualizing Governance in India: Understanding Governance Structure in India, From Government to Participatory Governance
- Understanding the NITI Aayog in designing public policy in India.
- Stakeholders involved in the Public Policy Process in India.
- Key Institutions of Governance: Executive (PMO, Cabinet Secretariat), Legislature, and Constitutional Bodies (ECI, CAG, UPSC)
- Decentralized Governance: 73rd & 74th Amendments, Panchayati Raj Institutions, and Urban Local Bodies
- Accountability Mechanisms: The RTI Act 2005, CVC, Lokpal & Lokayuktas, Social Audit

UNIT III: Development Administration & Communication in India 10 Hours

This unit integrates communication into India's development framework, analysing flagship schemes, digital governance, and the role of media and behaviour change communication in public policy.

- The Philosophy and Practice of Development Administration in India
- Flagship Development Schemes as Case Studies (e.g., MGNREGA, NHM, SBM, PMJDY)
- Digital India and E-Governance: Aadhaar, UPI, and the JAM Trinity
- The Role of Media in Indian Governance
- Behaviour Change Communication (BCC) in Indian Public Policy.

UNIT IV: Applied Governance Communication: Indian Strategies and Campaigns 10 Hours

This unit focuses on the practical application of communication strategies in the Indian context, including campaign deconstruction, social marketing, grievance redressal, and monitoring & evaluation.

- Designing Communication Strategies for Indian Public Schemes

- Deconstructing Iconic Indian Government Campaigns.
- Social Marketing for Public Good in India
- Crafting Documents for Indian Governance: Policy Briefs and Public Notices
- Public Grievance Redressal in India: CPGRAMS, Role of Social Media
- Monitoring & Evaluating Governance Communication

TUTORIAL
(Credit 1; Hours 15)

- Profile a specific Indian Government Ministry/Department, analysing its structure and key schemes.
- Prepare a Policy Brief on a live State/Central Scheme for a District Magistrate.
- Conduct a Communication Audit of a recent public campaign
- File an RTI application to a local authority and analyse the response and process.
- Develop a Stakeholder Mapping and Communication Plan for a local civic issue.
- Simulate a Social Audit for a local MGNREGA project using official portal data.
- Design a grassroots-level IEC (Information, Education, and Communication) campaign for a public health issue.

Essential Readings:

UNIT- I

- Arora, R. K., & Goyal, R. (2018). *Indian public administration: Institutions and issues* (2nd ed.). New Age International Publishers.
- Government of India. (2020). *Code of conduct for civil servants*. Department of Personnel and Training (DoPT).

UNIT- II

- Chakrabarty, B., & Bhattacharya, M. (2020). *The governance discourse in India*. Oxford University Press.
- Agarwal, O. P., & Somanathan, T. V. (2020). *Public policy making in India: Issues and remedies*. Routledge India.
- Bhattacharyya, D. (2019). *Decentralisation and local governance in India*. Oxford University Press.

UNIT- III

- Singh, H. (2019). *Public administration in India: An emerging perspective*. Routledge India.
- Kulkarni, S., & Mahadevia, D. (2016). Development administration and governance reforms in India. *Indian Journal of Public Administration, 62*(3), 456–472.
- Sood, S., Sengupta, M., Mishra, P. R., & Jacoby, C. (2018). Behaviour change communication in Indian public health programmes. *Journal of Health Communication, 23*(7), 626–636.

UNIT- IV

- Nair, S. (2019). *Strategic communication for public governance in India*. SAGE Publications India.
- Kotler, P., & Lee, N. (2016). *Social marketing: Changing behaviors for good* (5th ed.). SAGE.

Suggested Readings:

- Dubey, S. (2020). *Development Communication and Public Policy*. Sage Publications.
- *NITI Aayog Strategy Documents and Three-Year Action Agenda*. NITI Aayog, Government of India.
- *Economic Survey of India* (Latest Edition). Ministry of Finance, Government of India.
- *Yojana and Kurukshetra Magazines* (Relevant Issues on Governance and Development). Publications Division, Government of India.
- *MeitY's E-Governance Assessment Frameworks*. Ministry of Electronics and Information Technology, Government of India.

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

.

DISCIPLINE SPECIFIC CORE COURSE
GENDER, DIVERSITY AND INCLUSION

CREDIT DISTRIBUTION,ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Gender, Diversity and Inclusion	4	3	1	-	As per admission requirements	Should have studied a paper on geneder

Learning Objectives

1. To strengthen deep conceptual understanding of gender, power, identity, and social inequalities using feminist and intersectional perspectives.
2. To enable students to critically analyse how systems, institutions, and everyday practices shape inclusion and exclusion.
3. To build the capacity to design inclusive environments, policies, and organisational cultures rooted in gender justice and human rights.

Learning Outcomes

The students will be able to:

1. Explain and apply key gender theories, feminist frameworks, and intersectional analysis.
2. Critically assess how institutions produce exclusion based on gender, caste, class, sexuality, disability, and other identities.
3. Recommend practical, ethical, and socially just inclusion strategies across organisations, communities, and public systems.
4. Interpret contemporary debates and policies related to gender rights, inclusion, and social justice.

THEORY
(CREDITS 3, HOURS 45)

Unit I: Foundations of Gender, Diversity & Inclusion **12 hours**

This unit builds the foundational concepts and theoretical lenses used to understand gender, diversity, and inclusion.

• Conceptual distinctions: sex, gender, gender identity, diversity, inclusion
• Feminist theories: liberal, Marxist, radical, Dalit feminist thought
• Intersectionality and social location (caste, class, race, disability, sexuality)

• Socialisation, identity formation, and stereotyping
• Power, privilege, and systemic discrimination
• Historical evolution of gender justice movements (India & global)

Unit II: Gender, Diversity & Social Institutions. 13 Hours

This unit examines how social institutions shape, reinforce, or challenge inequality. Students learn to analyse structural dynamics across everyday and formal systems.

• Family, kinship, caste, religion and gender norms
• Education systems: curriculum bias, access, representation
• Labour and economy: occupational segregation, wage gaps, care economy
• Media and digital spaces: representation, body politics, stereotyping
• State institutions and governance: gender-responsive policies
• Social protection systems and exclusion

Unit III: Diversity, Inclusion & Organisations 10 hours

This unit deepens understanding of legal frameworks, and global benchmarks. It emphasises practical approaches for workplace equity.

• Concepts of diversity management and inclusive leadership
• Organisational culture and gender mainstreaming
• Tools: gender audits, climate assessments, inclusion checklists
• Legal frameworks: POSH Act 2013, equal opportunity policies
• Inclusive HR systems: recruitment, retention, career progression
• DEI in corporate, public, and development sectors

Unit IV: Creating Gender-Inclusive Environments – Policies, Practices & Social Change

10 Hours

This unit guides students to envision, design, and advocate for inclusive practices in organisations, communities, and public life. Focus is on real-world strategies and change-oriented thinking.

• Gender-inclusive organisational cultures
• GDI audits and measures for organisations- Global and National trends
• Building safe, accessible, gender-sensitive spaces
• Gender-responsive public policies (education, health, transport, urban design)
• Role of civil society, movements, and digital activism
• Community-engaged approaches for inclusion
• Case studies: gender-transformative programmes in India and globally

TUTORIAL
(Credits 1, Hours 15)

- Feminist text discussions (hooks, Menon, Rege, Crenshaw)
- Documentary screenings and analysis
- Debates on body politics, masculinity, rights
- Accessibility and safety walk-throughs on campus
- Discussions with activists, NGOs, or community representatives
- Policy review of gender laws and inclusive rights frameworks

Essential Readings

UNIT-1

- Borah, P. (2022). *Gender in Contemporary India: Issues and Debates*. Sage.
  Butler, J. (2016). *Gender Trouble* (Anniversary ed.). Routledge.

UNIT-II

- Crenshaw, K. (2017). *On Intersectionality: Essential Writings*. The New Press.
- Connell, R. (2020). *Gender in World Perspective* (4th ed.). Polity.
- Gopal, M. (2019). *Intersections: Gender, Caste, and Class in India*. Zubaan.

UNIT-III

- Hooks, B. (2015). *Feminism Is for Everybody*.
- Routledge.Kumar, N. (2021). *Gender and Society in India*. Routledge.

UNIT-IV

- Shaw, J., & Lee, J. (2021). *Women's Voices, Feminist Visions* (8th ed.). McGraw-Hill.
  UN Women. (2023). *Progress of the World's Women Report*.

Suggested Readings

- Gopal, M. (2019). *Intersections: Gender, Caste, and Class in India*. Zubaan.
- Bhasin, K. (2018). *What Is Patriarchy?* Women Unlimited.
- Dhar, R. (2023). *Gendering Governance in India*. Orient BlackSwan.
- Mor Barak, M. (2022). *Managing Diversity*. Sage.
  Nussbaum, M. (2001). *Women and Human Development*. Cambridge University Press.
- Sen, A. (2021). *The Argumentative Indian*. Penguin.Dhar, R. (2023). *Gendering Governance in India*. Orient BlackSwan.

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

.

DISCIPLINE SPECIFIC CORE COURSE
SOCIAL AND BEHAVIOUR CHANGE: THEORY & PRACTICE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Social and Behaviour Change: Theory & Practice	**4**	**2**	**0**	**2**	**As per admission requirements**	**Should be aware of concept of Communication for Development and Behaviour Change**

Learning Objectives

- To develop an understanding of correlations between Human Behavior and Social and Behaviour Change
- To appraise the diverse theories and models related to Social and Behavior Change.
- To design Social and Behavior Change strategies that tackle a range of social and development issues.

Learning Outcomes

The students would be able to:

- Co-relate Human behaviour and Social and Behaviour Change.
- Gain knowledge and proficiency in applying SBC concepts by appreciating the diverse theories and models related to Social and Behavior Change.
- Develop a SBC intervention tool kit for any social/development related issue.

THEORY

(Credits 2; Hours 30)

UNIT I: Human Behavior: An Insight **8 Hours**

This unit underpins on the correlation between the multi-faceted and multi-layered nature of human behaviour.

- Human Behavior and its multi-faced nature
- Perception, Persuasion and Thinking
- Attitude: Definition, formation, Mapping attitudes: models and theories
- Heuristics and Biases

UNIT II: Foundations of SBC **8 Hours**

This unit describes the concept, process and paradigm shifts in Social and Behavior Change.

- Social and Behaviour Change: Concept & Relevance
- Difference between IEC, BCC, SBCC and SBC
- Process of SBC
- Paradigm shifts in SBC: scope and relevance.
- Need and Relevance of SBC Strategies

UNIT III: Social and Behaviour Change: Theories & Models **8 Hours**

This unit explores the continuum of various SBC theories, models and its applications.

- Key concepts in SBC Theory: Individual and Social, Control, Threat, Risk, Reflection, Deliberation and Technologies & Innovation.
- Participatory theories and EE theories, Bullet Behavioural Theory
- Theories of Individual Behaviour Change: Theory of Planned Behaviour and Theory of Reasoned Action, Socio-ecological model, Health Belief Model, Stages of Change theory, Transtheoretical Model
- Nudges for behavior change
- Theories of Behavioural Economics: Decision Theory, Prospect Theory, Nudge Theory, Behavioural Game Theory, Evolutionary Psychology and others.

UNIT IV: Social and Behaviour Change: Applications **6 Hours**

This unit explores the areas and potential of SBC applications.

- Applications of Behavioural economics and Social and Behavioural Change
- Application of SBC theories in strategizing communication for change: Design of communication strategies and messages
- SBC in addressing various issues such as health, environmental, and social justice

PRACTICAL

(Credits 2; Hours 60)

- Personality and Human Behaviour: Assessment and relevance
- Perception, Learning and Thinking: How perception makes a difference in understanding and interpreting communication messages
- Attitude measurement and relevance
- Approaches to SBC: Identifying what works and what does not
- SBC campaigns- elements,
- SBC campaigns- tools and techniques
- Critical Analysis of SBC Campaigns and strategies
- Analysis of campaign's theory of change messages using behavioural theories
- Monitoring and Evaluation (M&E): Importance of M&E in SBC programs, Key indicators for assessing impact, Tools and techniques for tracking progress and refining strategies

Essential Readings

UNIT- I

- Bargh, J. A. (2017). *Before you know it: The unconscious reasons we do what we do*. New York, NY: Touchstone.
- Fiske, S. T., & Taylor, S. E. (2017). *Social cognition: From brains to culture* (3rd ed.). London, UK: Sage Publications.
- Stanovich, K. E., West, R. F., & Toplak, M. E. (2016). *The rationality quotient: Toward a test of rational thinking*. Cambridge, MA: MIT Press.

UNIT- II

- Fishbein, M., & Ajzen, I. (2015). *Predicting and changing behavior: The reasoned action approach*. New York, NY: Psychology Press.
- Manyozo, L. (2017). *Media, communication and development: Three approaches*. New Delhi, India: Sage Publications.
- UNICEF. (2019). *Communication for development (C4D): Social and behavior change*. New York, NY: UNICEF.

UNIT- III

- Ajzen, I. (2020). *Attitudes and persuasion*. Cambridge, UK: Cambridge University Press.
- Michie, S., Atkins, L., & West, R. (2016). *The behaviour change wheel: A guide to designing interventions*. London, UK: Silverback Publishing.
- Singhal, A., Cody, M. J., Rogers, E. M., & Sabido, M. (Eds.). (2015). *Entertainment-education and social change: History, research, and practice*. New York, NY: Routledge.

UNIT- IV

- Datta, S., & Mullainathan, S. (2017). Behavioral science and policy design. *Harvard Business Review*, 95(6), 44–53.
- Dolan, P., Hallsworth, M., Halpern, D., King, D., & Vlaev, I. (2015). Mindspace: Influencing behaviour through public policy. *Journal of Economic Psychology*, 45, 3–17. https://doi.org/10.1016/j.joep.2014.11.002.

Recommended Readings

- *Communication for social change: Context, social movements and the digital era* (2025). SAGE India.
- *Public health communication message design* (2025). SAGE India.
- Vaijappa, G., & Das, A. (Eds.). (2022). *Communication and social development perspective in India*. Mysore Book House
- Health Communication Capacity Collaborative HC3 (2016). *Social and Behavior Change Communication for Emergency Preparedness Implementation Kit.* © 2016, Johns Hopkins Center for Communication Programs

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

PROJECT MANAGEMENT & GRANT WRITING

CREDIT DISTRIBUTION,ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Project Management & Grant Writing	**4**	**3**	**-**	**1**	**As per admission requirements**	**Completed a course on CSR/Programme Evaluation**

Learning Objectives

1. To develop conceptual understanding and practical knowledge of project cycle management.
2. To equip learners with knowledge about sources for financing developent projects and skills to design, manage, and monitor development projects effectively.
3. To train students in writing persuasive, evidence-based project proposals and grant applications tailored to donor requirements.

Learning Outcomes

The students will be able to:

- Explain key principles, frameworks, and stages of project management.
- Apply project management tools for effective planning, budgeting, implementation, and evaluation.
- Prepare a complete project proposal including logical framework, budget, and monitoring plan.
- Demonstrate skills in identifying funding agencies and writing competitive grant applications.
- Critically assess project sustainability, stakeholder engagement, and ethical dimensions of project implementation.

THEORY
(Credits 3, Hours 45)

Unit I: Introduction to Project Management 10 Hours

This unit provides an overview of the concepts, life cycle, and frameworks in project management, emphasizing planning, feasibility, and alignment with organizational goals.

- Meaning, scope, and importance of project management in development and research contexts
- Project life cycle: initiation, planning, execution, monitoring, and closure
- Project Management Methodologies: Traditional (Waterfall) and modern (Agile, Scrum) approaches

- Project planning: Project charter, feasibility studies, and project selection models. Stakeholder identification and needs assessment
- Logical Framework Approach (LFA) and Theory of Change (ToC) as planning tools

Unit II: Project Design and Implementation 10 hours

This unit focuses on designing projects through frameworks, work plans, and budgets, and explores effective implementation and leadership approaches.

- Steps in project design and formulation
- Setting goals, objectives, outputs, outcomes, and indicators
- Developing work breakdown structures (WBS)
- Risk assessment and mitigation strategies
- Project Budgeting & Scheduling: types of costs, cost estimating, budget heads, justification, cost–benefit analysis, Time management of projects
- Quality control and Performance management
- Leadership & Team Building: Leading and managing project teams, conflict resolution, and negotiation.
- Organizational structures and Culture & Project management
- Gender, Diversity, inclusion, and sustainability perspectives in project design

Unit III: Development Finance 15 Hours

This unit focuses on identifying financing opportunities, aligning ideas with financial stakeholders priorities.

- Understanding Development Financing ecosystem: National and international funding agencies
- Mobilizing Capital: Strategies to unlock investment from public, private, domestic, and international sources for sustainable development goals (SDGs).
- Microfinance and digital finance (Fintech) in expanding financial access for households & development
- Development Finance Institutions (DFIs): The function, business models, and operational methods of DFIs and multilateral development banks (MDBs).
- Sustainable and Climate Finance: Integrating climate action and ESG (Environmental, Social, and Governance) considerations into financing mandates and using instruments like blended finance, Green bonds etc
- Social Impact Investing
- Identifying funding opportunities & calls for proposals: Funding databases, donor mapping, and eligibility assessment

Unit IV: Grant Writing Funding Management, and Reporting 10 Hours

This unit focuses on developing a proposal and post-award project management including grant compliance, tracking progress, financial accountability, and donor reporting.

- Developing a compelling concept note: Framing problem statements, goals, and rationale based on evidence
- Structuring winning proposal.
- Budget preparation: Cost estimation, justification, and linking budgets to outcomes
- Persuasive writing skills: Tone, clarity, logic, and storytelling in proposal writing
- Grant management cycle: Pre-award, post-award, and close-out stages

- Understanding grant agreements and compliance: Roles, deliverables, reporting timelines, and fund utilization norms
- Preparing technical and financial reports.
- Donor Communications & relations: Communicating with funders, building credibility, and maintaining transparency, sharing learnings, outcomes, and future engagement with donors & stakeholders

PRACTICAL
(Credits 1, Hours 30)

- Development finance agencies case studies
- Tools for situation and problem analysis: SWOT, problem tree, needs mapping
- Tools: Gantt charts, results framework, outcome mapping, and KPI tracking
- Preparing technical and financial reports for donors
- Grant Scoping Exercises: Students identify 3 relevant funding agencies for their project area and summarize eligibility, focus areas, and deadlines.
- Develop a Project Proposal for a Development issue: Draft a 1-page concept note for a development project.
- Peer-assess proposals using actual donor evaluation criteria.
- Create a sample project budget linking costs with outcomes.

Essential Readings

UNIT- I

- United Nations Development Programme. (2020). *Handbook on planning, monitoring and evaluating for development results*. UNDP.
- Bakewell, O., & Garbutt, A. (2015). The use and abuse of the logical framework approach. *Third World Quarterly, 26*(6), 915–932.

UNIT- II

- Kettner, P. M., Moroney, R. M., & Martin, L. L. (2016). *Designing and managing programs: An effectiveness-based approach* (5th ed.). SAGE Publications.
- Desai, V. (2022). *Project management and social development: Principles and practice*. SAGE Publications India.

UNIT- III

- Rao, P. K. (2018). *Development finance* (2nd ed.). Springer.
- Ghosh, J. (2019). Development finance and inclusive growth in India. *Economic and Political Weekly, 54*(17), 36–43.
- United Nations. (2020). *Financing for sustainable development report*. United Nations Department of Economic and Social Affairs.

UNIT-IV

- Khanna, R., & Kapoor, S. (2021). *Grant writing and fundraising for Indian NGOs: A practical guide*. Routledge India.
- Ebrahim, A. (2019). Measuring social change: Performance and accountability in complex worlds. *Stanford Social Innovation Review, 17*(2), 28–35.

- Government of India. (2020). *General Financial Rules (GFR), 2017 (Updated edition)*. Ministry of Finance.

Suggested Readings

- Bryson, J. M. (2018). *Strategic planning for public and nonprofit organizations.* Jossey-Bass.
- Chambers, R. (2017). *Whose reality counts? Putting the first last.* Intermediate Technology Publications.
- Gido, J., & Clements, J. P. (2018). *Successful project management* (7th ed.). Cengage Learning.
- Kapoor, I., & Sharma, R. (2020). *Grant writing for social impact: Principles and practice.* Sage Publications.
- Kothari, C. R., & Garg, G. (2022). *Research methodology: Methods and techniques* (5th ed.). New Age International.
- Joshi, S. (2023). *Resource Mobilization and Proposal Writing for Development Professionals*. New Delhi: Rawat Publications.
- The World Bank. (2021). *Project cycle management guidelines.*

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

PEACE, HUMAN RIGHTS AND HUMANITARIAN ACTION

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Peace, Human Rights and Humanitarian Action	**4**	**3**	**1**	**0**	**As per admission requirements**	

Learning Objectives:

- To understand the foundational concepts of peace, conflict, and violence and their interlinkages with development and human rights.
- To analyse the evolution, legal frameworks, and key debates in the field of human rights.
- To examine the principles, legal instruments, and operational challenges of humanitarian action.
- To develop skills in applying communication strategies for peacebuilding, human rights advocacy, and ethical humanitarian reporting.

Learning Outcomes:

The students would be able to:

- Differentiate between key concepts such as negative/positive peace and direct/structural violence, and apply relevant theories.
- Critically evaluate the international human rights and humanitarian legal architecture and its functioning.
- Analyse the roles, responsibilities, and dilemmas of various actors in the humanitarian ecosystem.
- Design context-appropriate and ethical communication strategies for conflict resolution, rights advocacy, and social cohesion.

THEORY
(Credits 3; Hours 45)

UNIT I: Conceptual Foundations: Peace, Conflict, and Violence **12 Hours**

This unit introduces the interlocking frameworks of peace, rights, and humanitarianism. It explores the meanings of peace and conflict, the dimensions of violence, and the major theoretical approaches that inform this field.

- Conceptual Foundations: The Interlocking Frameworks of Peace, Rights, Humanitarianism, and Development.
- Understanding Peace: Negative vs. Positive Peace; Peace-keeping, Peace-making, and Peace-building.
- Conflict: Sources, Types, and Implications.
- Violence and its Dimensions: Direct, Structural, and Cultural Violence, Everyday Violence.
- Theories and Approaches: Realist, Liberal, and Critical Theories (Gandhian, Feminist).
- Indian Context: Conflict and peace process (communal conflict, caste violence, gender violence, resistance movements).

UNIT II: Human Rights: Evolution, Frameworks, and Violations 11 Hours

This unit delves into the evolution, significance, and core debates surrounding human rights. It examines the key legal instruments and analyses contemporary human rights issues, with a specific focus on India.

- Understanding Human Rights: Significance, History, and Generations of Rights.
- Key Debates: Universality vs. Cultural Relativism; The Capabilities Approach (Sen, Nussbaum).
- Core Legal Instruments: The Universal Declaration of Human Rights (UDHR), International Covenants (ICCPR, ICESCR), Human Rights in the Indian Constitution.
- Human Rights Violations in Conflict Zones.
- Issues of Human Rights in India: Dalit and Adivasi Groups, Women and Children in Armed Conflict Zones, Human Rights and Climate Change.

UNIT III: Humanitarian Action: Principles, Law, and Praxis 11 Hours

This unit focuses on the system of humanitarian action, its guiding principles, and legal foundations. It critically examines the roles of international and national actors, coordination mechanisms, and operational challenges.

- Humanitarianism: Core Principles (Humanity, Impartiality, Neutrality, Independence).
- International Humanitarian Law (IHL): Geneva Conventions and their Additional Protocols.
- International Refugee Law: The 1951 Refugee Convention and its application in South Asia.
- Key Institutions & Coordination: UN Agencies (OCHA, UNHCR), Red Cross/Crescent Movement, NGOs (International and national), and the Cluster System.
- Accountability Frameworks: International Criminal Court (ICC), Responsibility to Protect (R2P).
- Critiques and Challenges: The "Humanitarian Imperative," Decolonial Perspectives, and Operational Dilemmas.
- Understanding Humanitarian aids and actions in Indian context

UNIT IV: Communication for Peace, Human Rights and Humanitarian Action 11 Hours

This unit explores the central role of communication in these fields, focusing on strategic, ethical, and practical applications in media, advocacy, and community engagement.

- Dialogue and Negotiation
- Media, Conflict & Peace: War Journalism vs. Peace Journalism; Countering Hate Speech and Misinformation.
- Humanitarian Communication & Ethics: The Politics of Imagery; critiques of "poverty porn" and ethical storytelling.

- Communication for Social Cohesion & Rights: Using SBCC for Peacebuilding; Participatory Communication (Community Radio, Participatory Video).
- Human Rights Advocacy & Campaigning: Developing a Communication Strategy, Stakeholder Mapping, and Crafting Policy Briefs.

Tutorial
(Credit 1; Hour 15)

- Analyse and compare media coverage of a conflict, identifying frames of War Journalism vs. Peace Journalism.
- Develop a stakeholder map and a one-page policy brief for a chosen human rights issue in India.
- Critically analyse the visual rhetoric and narrative of a humanitarian fundraising campaign.
- Design a concept note for a participatory communication project (e.g., using community radio) to address a local conflict or rights violation.
- Simulate the development of a core message and communication channel strategy for a humanitarian cluster responding to a disaster.

Essential Readings:

UNIT- I

- Galtung, J. (2015). *Peace by peaceful means: Peace and conflict, development and civilization* (Updated ed.). SAGE Publications.
- Chatterjee, P. (2018). *The politics of the governed: Reflections on popular politics in most of the world*. Columbia University Press.
- Rege, S. (2019). *Caste, violence, and democracy*. Oxford University Press India.

UNIT- II

- Nussbaum, M. C. (2016). *Creating capabilities: The human development approach*. Harvard University Press.
- Baxi, U. (2018). *Human rights in a posthuman world: Critical essays*. Oxford University Press India.
- Kothari, S. (2017). Human rights movements and the Indian state. *Journal of Human Rights Practice, 9*(2), 289–304.

UNIT- III

- Banerjee, D., & Duflo, E. (2019). Humanitarian crises, displacement, and development responses. *World Development, 117*, 1–12.
- Chaudhuri, S. (2020). India's humanitarian response to disasters: Institutions and challenges. *Indian Journal of Public Administration, 66*(2), 213–229.
- UNOCHA. (2021). *Humanitarian principles and coordination mechanisms*. United Nations Office for the Coordination of Humanitarian Affairs.

UNIT- IV

- Thomas, P. N. (2017). *Communication and human rights*. SAGE Publications India.
- UNESCO. (2020). *Journalism, fake news & disinformation: Handbook for journalism education and training*. UNESCO Publishing.

Suggested Readings:

- Gupta, N. (Ed.). (2021). *Social justice and human rights in India*. IBP Books
- *Human rights and Indian literary communities* (Ed.). (2026). Routledge.
- Richmond, O. P., & Pogodda, S. (Eds.). (2024). *Peacebuilding: A very short introduction* (Vol. 2). Oxford University Press.

DISCIPLINE SPECIFIC ELECTIVE COURSE

TRAINING AND CAPACITY BUILDING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Training and Capacity Building	**4**	**2**	**0**	**2**	**As per admission requirements**	**Should be aware of the concept and significance for training for development**

Learning Objectives

1. To familiarize with the concept and significance of training for development.
2. To understand the training process and the functions of different phases of training.
3. To know how different training approaches can be used to achieve various development goals.
   - To impart knowledge and skills for conducting effective training to deal with development challenges.

Learning Outcomes

The students would be able to:

- Assess the importance and scope of training for development.
- Learn the functions of different phases of the training process.
- Conceptualize and implement need-based training programs for different stakeholders to build knowledge, attitudes and skills
- Critically evaluate the different training strategies and their role in promoting development.

THEORY

(Credits 2; Hours 30)

UNIT I: Training for Development: Concept **8 Hours**

This unit explores the significance of training and capacity-building initiatives in fostering professional growth, organizational effectiveness, and societal development.

- Importance and Scope of Training for Development- National and Global Perspectives
- Government policies, programs, and institutions for training and capacity building for development initiatives
- Types, Approaches, Models, Theories, and Methods of training for bridging the gaps in

knowledge, attitudes, and skills
- Principles of adult learning, Learning theories, and models
- Training and capacity building needs of various client groups- communities; field level, midlevel, and other functionaries of development agencies, corporates and others

UNIT II: Training Tools **6 Hours**

This unit covers various training methodologies emerging innovations in the field of training and development. It also lays emphasis on Training Tools and Strategies

- Training methods– types, purpose, advantages, limitations, applications, and adaptations
- Participatory methods (lecture, demonstration, role play, case study, games, simulations, use of audio-visual aids, and technology-based methods)

UNIT III: Being an Effective Trainer **6 Hours**

This unit throws light on self-development of a trainer, his/her key roles a competency.

- Self-development of a trainer
- Roles and competencies of an effective trainer
- Mobilizing and working with small groups for training- communication, leadership, group dynamics, conflict resolution, team building
- Training needs assessment of individuals and organizations- techniques and their application

UNIT IV: Designing, Executing, and Evaluating Training Modules **10 Hours**

- Analysis of training programs for different stakeholders
- Designing and conducting training programmes for development- objectives, learning outcomes, contents, methods, materials & resources, feedback, evaluation, and budget
- Tools and techniques for training needs assessment: Surveys, Interviews, Focus Group Discussions and Skill Gap Analysis
- Understanding various learning goals and outcomes for specific target groups
- Development of Training modules and materials: manuals, presentations, case studies, and e-learning resources
- Implementation of training programmes: Time management, resource allocation, and participant engagement strategies
- Importance and Methods of evaluation, follow-up, and impact assessment of training: Methods, Models, tools and techniques, and innovations

PRACTICAL
(Credits 2; Hours 60)

- Self-development exercises for trainers
- Exercises in Team building
- Exercises on Leadership development
- Practice of participatory training tools and techniques: on-site
- Practice of participatory training tools and techniques: online using digital technology and AI tools
- Conduct a training needs analysis for an organization
- Plan and Design a training program
- Conduct a training program
- Critical Evaluation of Prior Training Programs
- Designing and Conducting a ToT for different stakeholders
- Development of Training IEC

Essential Readings

UNIT- I

- Noe, R. (2017). Employee training & development (7th ed.). New York, NY: McGraw- Hill Education. ISBN: 978-0-07-811285-0.
- Silberman, M. (Mel). (2015). Active training: A handbook of techniques, designs, case examples, and tips. (any edition). San Francisco, CA: Pfeiffer. ISBN: 9781118972014.

UNIT- II

- Noe, R. A. (2017). Employee training and development (7th ed.). New York, NY: McGraw-Hill Education.

(Training methods, participatory tools, technology-based learning)

- Salas, E., Tannenbaum, S. I., Kraiger, K., & Smith-Jentsch, K. A. (2015). The science of training and development in organizations. Psychological Science in the Public Interest, 13(2), 74–101. https://doi.org/10.1177/1529100612436661

UNIT- III

- Knowles, M. S., Holton, E. F., & Swanson, R. A. (2015). The adult learner: The definitive classic in adult education and human resource development (8th ed.). London, UK: Routledge.

(Adult learning, trainer roles, competencies, self-development)

- Northouse, P. G. (2018). Leadership: Theory and practice (8th ed.). Thousand Oaks, CA: Sage Publications.

(Group dynamics, leadership, communication, and team building for trainers)

UNIT- IV

- Kirkpatrick, D. L., & Kirkpatrick, J. D. (2016). Evaluating training programs: The four levels (4th ed.). Oakland, CA: Berrett-Koehler.

(Evaluation, impact assessment, and follow-up)

- Goldstein, I. L., & Ford, J. K. (2015). Training in organizations: Needs assessment, development, and evaluation (4th ed.). Belmont, CA: Cengage Learning.

(Training needs assessment, module design, implementation, and evaluation)

Suggested Readings

- Preskill, H., & Russ-Eft, D. (2016). Building evaluation capacity: Activities for teaching and training (2nd ed.). SAGE Publications.
- Mohanty, B. P., Sinha, A., Phand, S., Das, S., & Basade, Y. (Eds.). (2024). Capacity building in fisheries and aquaculture. NIPA.
- Emerging pedagogies for policy education: Insights from Asia. (2024). Springer/Academic Press.
- Building sustainable leadership capacity. (2025). SAGE India.
- Creating instructional capacity. (2025). SAGE India.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
ESG, SUSTAINABILITY REPORTING AND SOCIAL IMPACT

CREDIT DISTRIBUTION,ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
ESG, Sustainability Reporting and Social Impact	**4**	**3**	**-**	**1**	**As per admission requirements**	

Learning Objectives

1. To develop a comprehensive understanding of ESG principles, frameworks, and standards and their implications for corporate and development sectors.
2. To analyse sustainability reporting mechanisms, disclosure practices, and evaluation metrics in national and international contexts.
3. To assess social impact, ethical governance, and sustainable value creation through case-based and analytical approaches.

Learning Outcomes

The students will be able to:

1. Explain the evolution and components of ESG and sustainability frameworks.
2. Critically analyse sustainability and CSR reports across sectors.
3. Apply ESG metrics to evaluate organizational performance.
4. Conduct social impact assessments and interpret sustainability data.
5. Recommend strategies for inclusive and transparent ESG reporting aligned with global best practices.

THEORY
(Credits 3, Hours 45)

Unit I: ESG Foundations and Evolution **10 Hours**

This unit introduces the origins, philosophy, and evolution of ESG and sustainability in the corporate and development sectors.

- Emergence of ESG: Historical evolution and global milestones
- Principles of ESG: Environmental stewardship, social responsibility, governance ethics

- Relationship between ESG, CSR, and Sustainable Development Goals (SDGs)
- ESG in the Indian context: SEBI regulations, BRSR (Business Responsibility and Sustainability Report)
- Role of ESG in corporate reputation, investment, and risk management
- Institutional and policy drivers: UN Global Compact, PRI, GRI

Unit II: Sustainability Reporting and Disclosure Frameworks 13 Hours

This unit focuses on global and national sustainability reporting frameworks, emphasizing transparency, accountability, and disclosure standards.

- Sustainability reporting: Purpose, process, and principles
- Overview of GRI Standards, SASB, TCFD, and Integrated Reporting frameworks
- Business Responsibility and Sustainability Reporting (BRSR) – SEBI guidelines (2021 onwards)
- ESG disclosures in Indian companies
- Data metrics and indicators for ESG performance
- Assurance, verification, and third-party validation of ESG reports

Unit III: Social Impact Assessment and Measurement 12 Hours

This unit emphasizes tools and methodologies for assessing social and environmental impacts of programmes, businesses, and policies.

- Understanding social impact: definitions and frameworks
- Theories of change and logic models for impact measurement
- Social Return on Investment (SROI), cost-benefit analysis, and qualitative indicators
- Impact measurement in CSR, NGO, and corporate programmes
- Role of technology, AI, and big data in sustainability analytics
- SDGs and ESG disclosures

Unit IV: Social Impact Assessment, Measurement, and Future of ESG 10 Hours

This unit emphasizes social and environmental impact measurement, while exploring future ESG trends, challenges, and technological innovations.

- Understanding and measuring social impact – theories and frameworks
- Tools for social impact analysis
- Linking impact assessment with ESG goals and SDGs
- Technology and AI in ESG data management and impact measurement
- Ethical governance, greenwashing, and accountability issues in ESG reporting
- Future trends: green finance, carbon accounting, ESG investing, and global sustainability innovations

PRACTICAL
(Credits 1, Hours 30)

- Mapping evolution of ESG standards through a timeline
- Analysing BRSR framework for an Indian corporate companies
- Understanding ESG vs CSR
- Comparative analysis of two sustainability reports (one Indian, one international)
- Evaluation of ESG disclosure compliance
- Case study analysis: Social Impact Assessment (SIA) of a CSR project
- Developing an ESG strategy framework for a hypothetical company
- ESG-driven business innovation

Essential Readings

UNIT- I

- Bhattacharya, C. B., Korschun, D., & Sen, S. (2021). *Leveraging corporate responsibility: The stakeholder route to maximizing business and social value*. Cambridge University Press.
- Desai, V. (2022). *Sustainability, corporate governance, and responsibility in India*. SAGE Publications India.

UNIT- II

- Securities and Exchange Board of India. (2021). *BRSR core and assurance requirements*. SEBI.
- OECD. (2022). *ESG investing and sustainability disclosure frameworks: Global perspectives*. OECD Publishing.
- Institute of Chartered Accountants of India. (2020). *Integrated reporting framework and sustainability disclosures in India*. ICAI.

UNIT- III

- Desai, V., & Potter, R. B. (2018). *The companion to development studies* (3rd ed.). Routledge India.
- Nicholls, J., Lawlor, E., Neitzert, E., & Goodspeed, T. (2015). *A guide to social return on investment*. Social Value UK.
- Bandyopadhyay, S. (2021). Technology-driven impact measurement in Indian development programmes. *Economic and Political Weekly, 56*(23), 52–59.

UNIT- IV

- World Economic Forum. (2022). *Measuring stakeholder capitalism: Towards common ESG metrics*. WEF.
- SEBI. (2023). *BRSR core: ESG assurance and disclosure requirements*. Securities and Exchange Board of India.

Suggested Readings

- Singh, R., & Mishra, S. (2023). *Corporate Sustainability and Social Responsibility in India: Policy, Practice, and Performance*. New Delhi: Rawat Publications.
- Elkington, J. (2018). *The Triple Bottom Line: Does It All Add Up?* Routledge.
- Kumar, R., & Sharma, P. (2022). *Sustainability Reporting: A Practitioner's Guide for Indian Corporates*. New Delhi: PHI Learning.
- UNDP. (2020). *Impact Measurement and Management for the SDGs*. United Nations Development Programme.
- KPMG. (2023). *Sustainability Reporting Survey 2023*. KPMG International.
- Singh, P. (2021). *Environmental, Social and Governance (ESG): The Indian Context*. New Delhi: Excel Books.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
LIFELONG LEARNING AND LIFE SKILLS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Lifelong Learning and life Skills	4	3	1	0	As per admission requirements	

Learning Objectives

- To Understand key concepts, historical evolution, and terminology related to adult and lifelong learning in India and globally.
- To analyze national and international programmes and policies that shape lifelong learning, including the role of NGOs, industries, and global declarations.
- To examine life skills development among adolescents and youth, including skill acquisition processes, training principles, and learning techniques.
- To develop competencies to design, implement, and evaluate lifelong learning programmes, including needs assessment, training methods, and use of technology.

Learning Outcomes

The students would be able to:

- Explain major concepts, historical developments, and educational structures shaping lifelong and adult learning in India and internationally.
- Evaluate policy frameworks, programmes, and institutional roles in promoting lifelong learning at national and global levels.
- Apply principles of life skills training to design learning interventions for adolescents and youth using varied pedagogical approaches.
- Design and operationalize lifelong learning programmes through competency identification, training design, and technology-enabled learning tools.

THEORY
(Credits 3; Hours 45)

UNIT I: Foundations of Adult and Lifelong Learning **10 Hours**

This unit introduces the historical development of adult and lifelong learning in India, key concepts such as andragogy, pedagogy, and lifelong learning, and various forms of education. It also examines early national programmes that laid the foundation for literacy and continuing education.

- Historical perspective of Adult and Lifelong Learning in India – Pre- and Post-Independence
- Concepts and terminologies: Andragogy & Pedagogy, Lifelong Learning, Continuing Education
- Types of education: Formal, Non-Formal, Incidental Learning; Illiteracy and its forms

- Indian Adult / Lifelong Learning Programmes: Social Education, Gram Shiksha Mohim, Farmer's Functional Literacy Programme

UNIT II: National Lifelong Learning Policies and Programs 10 Hours

This unit explores India's major policies, national missions, and Five-Year Plan approaches to lifelong learning. It focuses on the developmental role of lifelong education and highlights emerging national needs and future directions.

- National Adult Education Programme and National Literacy Mission
- Approaches to Continuing Education / Lifelong Learning in different Five-Year Plans
- Lifelong Learning and Development: Social, Economic, Political and Cultural dimensions
- Emerging needs and future perspectives of Lifelong Learning

UNIT III: International and Sectoral Perspectives on Lifelong Learning 15 Hours

This unit provides global and sectoral perspectives, emphasizing international declarations, NGO roles, industry learning needs, and regional trends across Asia and SAARC. It also reviews major national and international frameworks shaping lifelong learning.

- Lifelong Learning needs of industries; Role of NGOs and Zilla Saksharta Samitis
- UNESCO Declaration on Adult and Lifelong Learning; Hamburg Declaration (1997)
- Mumbai Declaration on Role of Higher Education; Bharat GyanVigyan Jatha and Literacy House
- Trends in Adult & Lifelong Learning in Asia with focus on SAARC; National initiatives like Saakshar Bharat and international frameworks

UNIT IV: Adolescents, Youth and Life Skills Education 10 Hours

This unit examines the nature and types of life skills, processes of skill acquisition, and methods for life skills training. It highlights individual, family, institutional, and community approaches to strengthening youth competencies for personal and social development.

- Life skills: nature, classification and measurement
- Individual skills for self-identity
- Traditional family-based and institution-based skills acquisition processes
- Participatory and community-based skills acquisition processes; Principles of life skills training, learning aids, and training techniques

TUTORIAL

(Credits 1; Hours 15)

- Field Visit to an Adult Education Centre: Observe teaching methods, learner profiles, and programme structures in real settings.
- Case Study Analysis of National Literacy Mission: Review achievements, challenges, and innovations through structured analysis.
- Survey on Lifelong Learning Awareness: Conduct a small survey among adults to assess motivations, barriers, and learning needs.
- Mapping Local NGOs Working in Lifelong Learning: Prepare a brief report on their role, activities, and community reach.
- Document Review of UNESCO and Hamburg Declarations: Summarize key principles and implications for India in a practical worksheet.
- Industry Skill-Needs Assessment (Mini Exercise): Interview an HR professional or use secondary data to identify emerging skill demands.

- Design a Micro Training Module: Prepare a simple module for adult learners on topics such as digital literacy or financial literacy.
- Life Skills Training Activity for Youth: Conduct a role-play, group discussion, or problem-solving session based on one life skill (e.g., decision-making, communication).
- Participatory Rural Appraisal (PRA) Simulation: Practice community-based tools such as social mapping or seasonal calendars to identify learning needs.

Essential Readings:

UNIT- I

- Government of India. (2018). *Adult education and lifelong learning in India: Policy perspectives*. Ministry of Education.
- Indira Gandhi National Open University. (2022). *Lifelong learning: Issues and concerns* (Block-4). eGyanKosh.
- Jarvis, P. (2018). *Adult education and lifelong learning: Theory and practice* (4th ed.). Routledge.

UNIT- II

- Government of India. (2020). *New Education Policy 2020*. Ministry of Human Resource Development.
- National Institute of Adult Education. (2019). *Continuing education and lifelong learning in India*. NIAE.

UNIT- III

- UNESCO Institute for Lifelong Learning. (2015). *Rethinking lifelong learning for sustainable development*. UNESCO.
- UNESCO. (2016). *Education 2030: Incheon declaration and framework for action*. UNESCO Publishing.

UNIT- IV

- UNICEF India. (2019). *Life skills education framework for adolescents and youth*. UNICEF India.
- World Health Organization. (2020). *Life skills education for health promotion*. WHO.
- NCERT. (2021). *Adolescent education programme: Life skills modules*. National Council of Educational Research and Training.

Suggested Readings:

- AuthorLastName, F. (2024). *Lifelong learning for capability*. Springer Nature.
- London, M. (Ed.). (2021). *The Oxford handbook of lifelong learning* (2nd ed.). Oxford University Press.
- Jones, J. E., Baran, M., & Cosgrove, P. L. (Eds.). (2024). *Strategies and digital advances for outcome-based adult learning*.

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

SKILL BASED COURSES

SKILL BASED COURSE

MEDIA FOR CHANGE: PRINT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Media for Change: Print	**2**	**0**	**0**	**2**	**As per admission requirements**	**Should have awareness about print media and its role in catalysing change**

Learning Objectives

- To develop practical skills in designing and executing print media materials for social change.
- To understand the fundamentals of layout, typography, and content structuring in print media.
- To gain hands-on experience in print media content creation, including brochures, reports, and e-newsletters.
- To analyze and understand how different organizations use print media for various communication purposes.

Learning Outcomes

The students would be able to:

- Conceptualize and execute print media projects for social change.
- Apply principles of visual storytelling and layout design.
- Create engaging and persuasive print media materials.
- Develop a portfolio of work demonstrating proficiency in e-newsletter design and media analysis.
- Understand and evaluate print media strategies used by different organizations.

PRACTICAL
(Credits 2; Hours 60)

Study of Print media strategies, advocacy and key elements of a newsletter will be made understood to the students by the following activities:

- Selection of two organizations with distinct print media strategies
- Collection and categorization of sample print materials (magazines, brochures, reports)
- 1000-word comparative study analyzing design, messaging, and audience targeting
- Presentation of findings (PowerPoint or infographic format)
- Research on campaign messaging and audience
- Draft content for the brochure
- Initial layout design (wireframe/sketch)
- Final designed brochure (digital PDF format)
- Newsletter: Selection of theme and audience segmentation strategy
- Newsletter: Three short articles (each 200-300 words)
- Newsletter: Multimedia integration (images, videos, hyperlinks)
- Newsletter: Final e-newsletter in an interactive format (PDF or email-friendly HTML)

Suggested Software for E-Newsletter and Print Design:

- Mailchimp
- Canva
- Adobe InDesign
- Microsoft Sway
- Lucidpress

Essential Readings

- Lester, P. M. (2018). *Visual Communication: Images with Messages.* Cengage Learning.
- Wheeler, A. (2021). *Designing Brand Identity.* Wiley.
- Roberts-Breslin, J. (2022). *Making media: Foundations of sound and image production* (5th ed.). Routledge

Suggested Readings

- Spinelli, M., & Dann, L. (2019). *Podcasting: The audio media revolution*. Bloomsbury Academic.
- Kindem, G., & Musburger, R. B. (2023). *Introduction to media production* (3rd ed.). Routledge.
- Carah, N. (2025). *Media & society* (3rd ed.). SAGE India
- Morris, T., & Tomasi, C. (2021). *Podcasting For Dummies* (5th ed.). — Practical step-by-step guide to creating and producing podcasts.

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

SKILL BASED COURSE

CORPORATE COMMUNICATION AND BRAND MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Corporate Communication & Brand Management	**2**	**0**	**0**	**2**	**As per admission requirements**	**Should be aware about concept of corporate communication and public relations**

Learning Objectives

- To understand the concept and significance of corporate communication
- To develop an understanding of how organizations communicate with internal and external stakeholders.
- To develop skills for creating effective corporate communication strategies
- To gain practical insights into corporate branding, reputation management and crisis communication

Learning Outcomes

The students will be able to:

- Demonstrate a clear understanding of corporate communication concepts and their significance in business.
- Develop and implement corporate communication strategies
- Manage and analyse brand equity
- Handle PR and Crisis Communication

PRACTICAL

(Credits 2, 60 Hours)

The concept and scope of corporate communication, public relations and brand management will be made understood to the students by the discussions/debates/forums on and activities/assignments planned around the topics given below:

- Concept and Scope of Corporate Communication
- Importance of Corporate Communication in Organizations
- Corporate Identity, Image, perception and Reputation
- Tools of Corporate Communication (Newsletters, Press Releases, Annual Reports)
- Internal vs. External Communication
- Case studies
- Create template of internal and external newsletter (Digital and Print) for an organisation
- Definition and Scope of Public Relations
- PR Strategies, Tools and Campaign Planning
- Media Relations and Press Conferences
- Crisis Communication and Reputation Management
- Case Studies on Effective PR Campaigns
- Design PR Campaign for an event
- Drafting Press Releases
- Design Brochures
- Design newsletters
- Mock Press Conference
- Managing a crisis communication of a brand or a personality facing a backlash.
- Understanding Brand and Brand Equity
- Importance of Brand Positioning and Differentiation
- Building a Brand Personality
- Case Studies
- Creating a Brand, Brand Identity Kit and Presentation
- Presentation on a Brand's Journey
- Integrated Marketing Communication
- Brand Building through social media
- Content Creation and Brand Storytelling
- Case Studies
- Creation of short video on brand storytelling for social media: story board, content creation and video making

Essential Readings

- Argenti, P. A. (2017). *Corporate communication* (7th ed.). McGraw-Hill Education.
- Bivins, T. H. (2017). *Public relations writing: The essentials of style and format* (8th ed.). McGraw-Hill Education.
- Fearn-Banks, K. (2017). *Crisis communications: A casebook approach* (5th ed.). Routledge.
- Jethwaney, J. (2024). *Corporate Communication Concepts and Practice (1st ed.). Routledge.*

Suggested Readings

- Cornelissen, J. (2020). *Corporate Communication: A Guide to Theory and Practice*. SAGE Publications.
- Kotler, P., & Keller, K. L. (2019). *Marketing management* (15th ed.). Pearson.

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

SKILL BASED COURSE

MEDIA FOR CHANGE: AUDIO

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Media for Change: Audio	2	0	0	2	As per admission requirements	Should have basic awareness about audio aids and media

Learning Objectives

1. To develop practical skills in creating and producing audio content for social change.
2. To understand the role of sound, voice, and music in communicating messages effectively in audio media.
3. To gain hands-on experience in producing podcasts, radio segments, and audio for social campaigns.
4. To critically analyse how audio can be used by different organizations to drive social change.

Learning Outcomes

The students would be able to:

1. Conceptualize and produce audio content for social change initiatives.
2. Apply audio production techniques, including scripting, recording, and editing.
3. Create engaging and impactful podcasts or radio segments.
4. Develop a portfolio demonstrating proficiency in audio content creation and analysis.
5. Evaluate how audio media strategies are employed by different organizations for social advocacy.

PRACTICAL

(Credits 2; Hours 60)

Elements of soundscape design, audio collection samples, design of radio magazine will be taught through the following activities/assignments

- Research the chosen issue (e.g., climate change, urbanization, migration)
- Select relevant sound elements (natural sounds, human voices, background noise, etc.)

- Design and mix a 2-3 minutes soundscape that conveys the issue's essence and impact
- Submit the final soundscape (in MP3 or WAV format) along with a brief 500- word explanation of your choices for sounds and their role in delivering the message.
- Choose a Development Issue: Select a specific development issue such as poverty, education, healthcare, gender equality, or climate change.
- Audio Collection Formats: Interviews, Ambient Sounds, Field Recordings, Narrative Voiceover
- Select a theme (e.g., social issues, arts and culture, health) for the magazine
- Plan and script the segments (including interviews, narration, sound effects, and music)
- Record and edit the segments to produce radio magazine episode
- Suggested Software for Audio Production: Audacity, Nueando**,** Auphonic, LMMS (Linux Multimedia Studio)

Essential Readings

- Spinelli, M., & Dann, L. (2019). *Podcasting: The audio media revolution*. Bloomsbury Academic.
- Roberts-Breslin, J. (2022). *Making media: Foundations of sound and image production* (5th ed.). Routledge

Suggested Readings

- Kindem, G., & Musburger, R. B. (2023). *Introduction to media production* (3rd ed.). Routledge.
- Carah, N. (2025). *Media & society* (3rd ed.). SAGE India
- Morris, T., & Tomasi, C. (2021). *Podcasting For Dummies* (5th ed.). — Practical step-by-step guide to creating and producing podcasts.

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

SKILL BASED COURSE

TRADITIONAL MEDIA FOR CHANGE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Traditional Media for Change (Skill-based Course)	**2**	0	**0**	**2**	**As per admission requirements**	**Should have basic awareness about audio aids and media**

Learning Objectives:

- To develop conceptual understanding and practical knowledge of traditional media as a development communication
- To identify and analyse various traditional media forms, their narrative and performative grammar.
- To design culturally sensitive traditional media strategies through community listening, audience insight, vernacular message framing, and ethical consideration.
- To produce and evaluate a traditional media campaign by creating scripts/prototypes, executing performances/visual outputs, documenting processes, and assessing through feedback and observations.

Learning Outcomes:

The students will be able to:

- Explain the concept, relevance, and role of traditional media in development.
- Identify and differentiate major traditional media forms and their communicative grammar from mainstream/digital media.
- Map and document local traditional media ecologies and audience contexts through exercises.
- Design and script culturally resonant traditional media messages/interventions for specific development issues.
- Produce, execute, and evaluate traditional media campaign and present documented portfolio with audience-feedback analysis.

PRACTICAL
(Credits 2 ; Hours 60)

Unit I: Traditional media for Development **15 hours**

- Defining traditional media, significance, scope, characteristics
- Traditional vs. mainstream vs. digital media
- Traditional media for development and social change, cases studies
- Theories: Diffusion of innovation, participatory paradigm and cultural resonance
- Practice: (i) Mapping traditional media in local contexts. (ii) Problem Tree role-play comparing top-down lecture/speech vs dialogic communication.

Unit II: Forms and Grammar of Traditional Media **15 hours**

- Different forms of traditional media: Folk tales, songs, dance, puppetry, theatre, street play, wall art, paintings
- Elements of traditional media grammar: oral narrative, repetition, symbolism, rhythm, humour, satire
- Practice: (i) Traditional media analysis using parameters. (ii) Develop a concept using one traditional form to communicate a development theme/issue.

Unit III: Designing Traditional Media Interventions **15 hours**

- Understanding community & cultural context
- Problem and audience insight
- Message framing in vernacular idioms, selecting form and performers
- Scripting and rehearsal
- Practice: Scriptwriting/Storyboard lab for one selected traditional form addressing a community issue.

Unit IV: Production, Execution and Evaluation **15 Hours**

- Campaign planning using traditional media, objectives, audience
- Production workflow: Message design, budget planning, prototyping, scripting and adaptation, documentation and evaluation
- Practice: Group prototype, execution (campus/community) and short evaluation report based on audience feedback and observation.

Essential reading:

UNIT- I

- Rao, S. (2019). Traditional media and social change in rural India. *Media Asia*, 46(1), 45–53. https://doi.org/10.1080/01296612.2019.1572004
- Singhal, A., & Papa, M. J. (2016). *Organizing for social change: A dialectic journey of theory and praxis*. New Delhi, India: Sage Publications.
- Thomas, P. N. (2019). *Communication and development: Freirean perspectives*. New Delhi, India: Sage Publications.

UNIT II

- Panthukala, S. (2021). Traditional Folk Media in India: Jathara as a mode of Communication for Development and Social Change.
- Galagedarage, G. T. M. (2021). The role of traditional folk media in empowering rural communities in Sri Lanka.

UNIT- III

- Manyozo, L. (2017). *Media, communication and development: Three approaches*. New Delhi, India: Sage Publications.
- Thomas, P. N. (2019). *Communication and development: Freirean perspectives*. New Delhi, India: Sage Publications.
- Rao, S. (2020). Traditional media, culture, and development communication in India. *Journal of Creative Communications*, 15(1), 21–35. https://doi.org/10.1177/0973258619892356

UNIT- IV

- Galagedarage, G. T. M. (2021). The role of traditional folk media in empowering rural communities in Sri Lanka.

Suggested Reading:

- Kindem, G., & Musburger, R. B. (2023). *Introduction to media production* (3rd ed.). Routledge.
- Carah, N. (2025). *Media & society* (3rd ed.). SAGE India
- **Morris, T., & Tomasi, C. (2021). *Podcasting For Dummies* (5th ed.).** — Practical step-by-step guide to creating and producing podcasts.

SKILL BASED COURSE

MEDIA FOR CHANGE: VIDEO PRODUCTION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Media for Change: Video for Change	**2**	**0**	**0**	**2**	**As per admission requirements**	**Should be aware about concept of audio productio n**

Learning Objectives

- To understand fundamental principles of video production, including framing, lighting, sound, and editing.
- To apply pre-production planning skills—concept development, audience analysis, and scriptwriting—to real-world contexts.
- To demonstrate technical proficiency in mobile-based video recording and editing tools.
- To evaluate the effectiveness of video communication in addressing community issues and promoting social change.

Learning Outcomes

After completing the course, students will be able to:

- Produce short, clear, and impactful videos using mobile devices and accessible tools.
- Design scripts and storyboards tailored to specific audiences and community challenges.
- Edit and optimize videos for multiple platforms (e.g., classroom, WhatsApp, YouTube) with subtitles and audio enhancements.
- Critically assess video projects for creativity, clarity, and social impact through peer and community feedback.

PRACTICAL
(Credits 2 ; Hours 60)

Unit I: Fundamentals of Video Language and Production 15 Hours

This unit builds technical foundations in camera handling, framing, lighting, and visual grammar essential for producing meaningful visual narratives.

- Grammar of Video: camera shots, angles, and movements
- Framing and composition: rule of thirds, balance, and perspective
- Lighting principles: natural vs. artificial, three-point lighting
- Basics of sound recording and voice clarity in field conditions
- Ethical considerations and representation in visual media
- Workshop: Shooting a one-minute video with three types of shots

Unit II: Pre-Production – Planning, Conceptualization & Scripting 15 Hours

This unit will help in transforming social issues into compelling video concepts through structured pre-production planning.

- Concept development for social change: identifying local issues (e.g., gender equality, health, environment, livelihood)
- Research and audience analysis for contextual storytelling
- Writing scripts for short-form videos (under 3 minutes)
- Developing storyboards and shot lists
- Planning field shoots: location scouting, logistics, and permissions
- Tutorial Activity: Group brainstorming and pitch presentation of a video idea

Unit III: Production – Mobile Filmmaking Techniques 15 Hours

This unit focuses on using accessible mobile tools to film and capture authentic stories for change.

- Essential mobile filmmaking gear: tripods, microphones, lights
- Camera settings: resolution, focus, exposure, white balance
- Shooting with purpose: scene continuity, movement, and framing
- Using mobile filmmaking apps (Filmic Pro, ProTake, Open Camera)
- Interview techniques and capturing real voices
- Practical: Record a 2–3 minute field-based short video on a community theme

Unit IV: Post-Production, Impact and Dissemination 15 Hours

This unit will help students to develop editing, storytelling, and impact analysis skills to enhance message clarity and reach.

- Editing tools: InShot, CapCut, Kinemaster (basic transitions, trimming, subtitles, audio mixing)
- Visual aesthetics: colour correction, filters, pacing, and rhythm
- Creating impact: story arc, call-to-action, and message clarity

- Platform-specific optimization: YouTube, WhatsApp, social media
- Designing feedback loops: peer evaluation, community screenings
- Final Project: Produce a 3–5 minute video advocating a social change issue; organize a departmental screening and impact discussion.

Essential Readings

UNIT- I

- Zettl, H. (2020). Video Basics (9th ed.). Wadsworth Publishing.
- Millerson, G. (2019). Video Production Handbook (6th ed.). Focal Press.
- Mehta, N. (2020). Television in India: Satellites, Politics and Cultural Change. Routledge India. (Selected chapters on visual language and ethics)

UNIT- II

- Gupta, S. (2021). Advertising and Video Production. PHI Learning, New Delhi.
- Dey, A. (2022). Digital Filmmaking in India: A Practical Guide. Sage India.
- Zettl, H. (2020). Video Basics. (Chapters on scriptwriting, storyboarding, and pre-production planning)

UNIT- III

- Dey, A. (2022). Digital Filmmaking in India: A Practical Guide. Sage India.
- Millerson, G. (2019). Video Production Handbook. (Sections on shooting, sound, and field production)
- Zettl, H. (2020). Video Basics. (Chapters on camera operation and visual continuity)

UNIT- IV

- Gupta, S. (2021). Advertising and Video Production. PHI Learning, New Delhi. (Chapters on editing and message effectiveness)
- Dey, A. (2022). Digital Filmmaking in India: A Practical Guide. Sage India. (Sections on editing, distribution, and digital platforms)
- Mehta, N. (2020). Television in India: Satellites, Politics and Cultural Change. Routledge India. (Selected chapters on dissemination and audience reception)

Suggested Readings

- Brown, B. (2021). *Cinematography: Theory and Practice.* Routledge.
- Bowen, C. J. (2020). *Grammar of the Shot.* Focal Press.
- Vasudevan, R. (2016). *The Melodramatic Public: Film Form and Spectatorship in Indian Cinema.* Permanent Black.
- Kumar, S. (2023). *Media, Society and Change in India.* Sage Publications.

Annexure-6

UNIVERSITY OF DELHI

Department of Home Science

Faculty of Science

1-Year M.Sc.

Development Communication & Extension

Coursework + Research Track

Department of Home Science

University of Delhi

Course Credit Structure- NEP 2025

The Department of Home Science offers a one-year Master's Programme in Development Communication & Extension designed to equip students with a deep understanding of communication strategies, participatory approaches, and community development practices. The programme bridges theory and practice, emphasizing communication for social change, media literacy, research, and extension management. Students gain the knowledge and skills needed to design, implement, and evaluate communication interventions that empower communities and foster sustainable development. The curriculum integrates academic rigor, field engagement, and technological innovation, ensuring students are prepared for leadership roles in development organizations, media institutions, academia, and research agencies.

Programme Specific Objectives:

- To build a strong foundation in development theories, participatory communication, and extension education for sustainable social transformation.
- To equip students with advanced research and analytical skills for investigating development issues and evaluating communication strategies.
- To strengthen students' ability to design and implement evidence-based communication programmes addressing real-world social challenges.
- To cultivate ethical, inclusive, and gender-sensitive perspectives in all aspects of development and communication practice.
- To foster appreciation for community knowledge systems and participatory methods that empower marginalized groups.
- To prepare graduates for professional roles in development agencies, NGOs, media organizations, research institutes, and academic institutions.
- To promote engagement with emerging communication technologies for effective dissemination, advocacy, and behavioral change.

Programme Specific Outcomes:

The post graduate program in the Department of Development Communication & Extension, strives to educate and train students to enable them to:

- Apply development and communication theories to design context-specific, community-driven interventions.
- Demonstrate proficiency in media production, research methodologies, and participatory communication techniques.
- Critically evaluate and apply ICTs and digital tools for social and behavioral change communication.
- Integrate ethical and gender-sensitive principles into communication and extension practices.
- Work collaboratively with diverse stakeholders to implement and manage community-based programmes.
- Exhibit leadership in development communication, policy advocacy, and capacity-building initiatives.
- Conduct innovative research contributing to sustainable development, public awareness, and inclusive growth.

List of Courses to be offered to students opting for Structure-2 of M.Sc. in 1st and 2nd Semester of one year course							
Type of Course	**Type**	**Semester**	**Name of Courses**	**Credit in each course**			
				Lecture	**Tutorial**	**Practical**	**Total**
SEMESTER – I							
Discipline Specific Core Course	**DSC1**	**I**	**Monitoring, Evaluation & Learning for Development**	**3**	**0**	**1**	**4**
Discipline Specific Core Course	**DSC2**	**I**	**New Media and AI and its Application to Home**	**2**	**0**	**2**	**4**
Discipline Specific Elective Course	**DSE1**	**I**	**From the Pool of DSEs given below:**	**3**	**0**	**1**	**4**
Discipline Specific Elective Course	**DSE2**	**I**	• **Statistics and Data Management**				
			• **Consumer Behaviour and Sustainable Development**	**3**	**1**	**0**	**4**
			• **Food Systems & Nutrition Security**	**3**	**0**	**1**	**4**
			• **Human Centred Design & Innovation**	**3**	**0**	**1**	**4**
			• **Social Entrepreneurship**	**3**	**1**	**0**	**4**
			• **Poverty, livelihood systems & Skilling**	**3**	**1**	**0**	**4**
			• **Civil Society and Volunteer Management**	**3**	**1**	**0**	**4**
			• **Community Organisation, Social Policy & Development**	**3**	**1**	**0**	**4**
SEMESTER II							
Discipline Specific Core Course	**DSC1**	**II**	**Climate Change, Green Technologies and Environment Action**	**3**	**0**	**1**	**4**
Discipline Specific Core Course	**DSC2**	**II**	**Communication for Nutrition, Health and Wellbeing**	**2**	**0**	**2**	**4**

Discipline Specific Elective Course	**DSE1**	**II**	**From the Pool of DSEs given below:** • **Rural Marketing and Development** • **Public Administration and Governance** • **Gender, Diversity and Inclusion** • **SBC: Theory & Practice** • **Project Management& Grant Writing** • **Peace, Human Rights and Humanitarian Action** • **Training & Capacity Building** • **ESG, Sustainability Reporting and Social Impact** • **Lifelong Learning and Life Skills**				
Discipline Specific Elective Course	**DSE2**	**II**		**3** **3** **3** **2** **3** **3** **2** **3** **3**	**1** **1** **1** **0** **0** **1** **0** **0** **1**	**0** **0** **0** **2** **1** **0** **2** **1** **0**	**4** **4** **4** **4** **4** **4** **4** **4** **4**
General Elective Course	**GE3**	**II**	**Organizational Communication: Tools & Techniques**	**3**	**1**	**0**	**4**
Pool of Discipline Specific Elective Courses to be offered in the 1st semester#	**Statistics and Data Management**						
	Consumer Behaviour and Sustainable Development						
	Food Systems & Nutrition Security						
	Human Centred Design & Innovation						
	Social Entrepreneurship						
	Poverty, livelihood systems & Skilling						

	Civil Society and Volunteer Management
	Community Organisation, Social Policy & Development
Pool of Discipline Specific Elective Courses to be offered in the 2nd Semester##	**Rural Marketing and Development**
	Public Administration and Governance
	Project Management& Grant Writing
	Peace, Human Rights and Humanitarian Action
	ESG, Sustainability Reporting and Social Impact
	Lifelong Learning and Life Skills
	Gender, Diversity and Inclusion
	SBC: Theory & Practice
	Training & Capacity Building

DEPARTMENT OF DEVELOPMENT COMMUNICATION AND EXTENSION

1-Year MSc Curriculum under NEP

Coursework + Research Track

DSC				DSE				SBC				Dissertation/Academic Project/Entrepreneurship
Paper Title (4 Credits each)	**Credit Distribution**			**Paper Title (4 Credits each)**	**Credit Distribution**			**Paper Title (2 Credits each)**	**Credit Distribution**			
	Th	**Tu**	**Pr**		**Th**	**Tu**	**Pr**		**Th**	**Tu**	**Pr**	
SEMESTER I												
Pick All 2				**Pick Any 2**								
Monitoring, Evaluation & Learning for Development	3	0	1	Statistics & Data Management	3	0	1	NIL				6 credits
New Media and AI and its Application to Home	2	0	2	Consumer Behaviour and Sustainable Development	3	1	0					
				Food Systems & Nutrition Security	3	0	1					
				Human Centred Design & Innovation	3	0	1					

				Social Entrepreneurship Poverty, livelihood systems & Skilling Civil Society and Volunteer Management OR Community Organisation, Social Policy & Development	3 3 3 3	1 1 1 1	0 0 0 0		
SEMESTER II									
Pick All 2				**Pick Any 2**					
Climate Change, Green Technologies and Environment Action	3	0	1	Rural Marketing and Development Public Administration and Governance Gender, Diversity and Inclusion SBC: Theory & Practice	3 3 3 3	1 1 1 1	0 - -	NIL	6 credits

Communication for Nutrition, Health and Wellbeing	2	0	2	Project Management & Grant Writing Peace, Human Rights and Humanitarian Action Training & Capacity Building	3 3 2	- 1 -	1 - 2		
				ESG, Sustainability Reporting and Social Impact Lifelong Learning and Life Skills	3 3	- 1	1 -		

DISCIPLINE SPECIFIC CORE COURSE

MONITORING, EVALUATION & LEARNING FOR DEVELOPMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Monitoring, Evaluation & Learning for Development	**4**	**3**	**-**	**1**	**As per admission requirements**	**Should be aware of concept of programme monitoring and evaluation**

Learning Objectives

1. To understand the conceptual and theoretical foundations of monitoring, evaluation, and learning in development programmes.
2. To gain the ability to design and apply MEL frameworks and tools for planning, implementation, and assessment of social and behavioural change initiatives.
3. To critically analyse the use of MEL systems for improving accountability, adaptive learning, and evidence-based policy-making.

Learning Outcomes

The students will be able to:

1. Differentiate between monitoring, evaluation, and learning functions within the development cycle.
2. Construct and operationalize a logical framework and results-based management system for a development project.
3. Design appropriate qualitative and quantitative indicators and data collection tools.
4. Apply participatory and adaptive MEL approaches in real-world contexts.

THEORY
(Credits 3, Hours 45)

Unit I: Concepts and Frameworks of Monitoring, Evaluation & Learning (12 hours)

This unit explores the evolution, purpose, principles and related approaches to MEL.

- Evolution and purpose of M&E in development practice

- Relationship between Monitoring, Evaluation, and Learning (MEL)
- Principles of Results-Based Management (RBM)
- Theories of Change and Logical Framework Approach (LFA)
- Key terminology and standards (OECD-DAC, UNDP, World Bank)

Unit II: Designing and Implementing Monitoring Systems (10 hours)

This unit focusses on the various frameworks and indicators required for setting up monitoring systems.

- Monitoring frameworks and indicator development
- Types of indicators: input, output, outcome, and impact
- M&E tools and approaches
- Use of ICT, AI and digital tools for monitoring
- Ethical considerations and data quality assurance

Unit III: Evaluation Design, Methods, and Use (13 hours)

This unit explores the various types of evaluation designs.

- Types of evaluation: formative, summative, process, impact, developmental
- Evaluation design: experimental, quasi-experimental, and mixed-methods approaches
- Participatory and utilization-focused evaluation
- Gender responsive evaluations
- Reporting, dissemination, and stakeholder engagement
- Learning from evaluation: feedback loops and adaptive management

Unit IV: Learning, Knowledge Management and Policy Linkages (10 hours)

This unit focusses on the several linkages of MEL systems.

- Integrating learning within MEL systems
- Organizational learning and reflective practice
- Knowledge management tools and platforms for MEL
- Communicating results for advocacy and decision-making

PRACTICAL
(Credits 1; Hours 30)

- Interactive lectures and seminars
- Group exercises for developing log frames, indicators, and theories of change
- Case study analysis of M&E reports from UN/NGOs
- Field assignments for data collection and learning reflection
- Data collection tools and frequency
- MIS, dashboards, participatory tools
- Case studies of MEL in social and behavioural change (SBC), gender, and sustainable development programmes

Essential Readings:

Unit-I

- OECD Development Assistance Committee. (2019). *Better criteria for better evaluation: Revised evaluation criteria definitions and principles for use*. OECD Publishing.
- UNDP. (2021). *Handbook on planning, monitoring and evaluating for development results* (Updated ed.). United Nations Development Programme.
- UNICEF. (2015). *Theory of change: UNICEF guidance document*. United Nations Children's Fund.

Unit-II

- UNDP. (2021). *Handbook on planning, monitoring and evaluating for development results* (Updated ed.). United Nations Development Programme.
- Yim, M., & Gomez, R. (2021). ICT4D evaluation: Its foci, challenges, gaps, limitations, and possible approaches for improvement. *Information Technology for Development, 27*(4), 684–708. https://doi.org/10.1080/02681102.2021.1951151
- Magis-Weinberg, L., Ballonoff Suleiman, A., & Dahl, R. E. (2021). Context, development, and digital media: Implications for very young adolescents in LMICs. *Frontiers in Psychology, 12*, 632713. https://doi.org/10.3389/fpsyg.2021.632713

Unit-III

- NTRAC. (2020). *Learning from monitoring and evaluation: Reflections on practice*. INTRAC.
- OECD Development Assistance Committee. (2019). *Better criteria for better evaluation: Revised evaluation criteria definitions and principles for use*. OECD Publishing.
- Patton, M. Q. (2011). *Developmental evaluation: Applying complexity concepts to enhance innovation and use*. Guilford Press.
  (Actively used in post-2015 evaluation practice and curricula)

Unit-IV

- USAID. (2019). *Collaborating, learning and adapting (CLA) framework*. United States Agency for International Development.
- UNDP. (2021). *Handbook on planning, monitoring and evaluating for development results* (Updated ed.). United Nations Development Programme.

Suggested Readings:

- Mayne, J. (2017). *Theory of Change Analysis: Building Robust Theories of Change*.*Canadian Journal of Program Evaluation*, 32(2), 155–173.
- UNICEF (2020). *Monitoring Results for Equity System (MoRES)*. UNICEF Evaluation Office.

Suggested Supplementary Online Resources

- UNICEF Evaluation Office: https://evaluation.unicef.org

- OECD-DAC Evaluation Criteria: https://www.oecd.org/dac/evaluation/
- BetterEvaluation Platform: https://www.betterevaluation.org/
- USAID Learning Lab: https://usaidlearninglab.org/

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

DISCIPLINE SPECIFIC CORE COURSE

NEW MEDIA AND AI AND ITS APPLICATION TO HOME

CREDIT DISTRIBUTION,ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
New Media and AI and its Application to Home	4	2	-	2	As per admission requirements	Should have studied papers in media

Learning Objectives

- To develop a comprehensive understanding about the role of new media in development of the society
- To acquire insights into technological progress and its application within the media sector
- To evaluate future opportunities and challenges in integrating AI and new media for development

Learning Outcomes

The students will be able to:

- Demonstrate an extensive understanding of new media and AI concepts, as well as their significance in development communication.
- Assess ethical considerations, digital rights, and the policy frameworks that regulate AI and new media.
- Formulate strategies that utilize participatory communication, digital literacy, and inclusive technologies to engage communities in development initiatives.

THEORY
(Credits 2, Hours 30)

Unit I: Introduction to New Media and Development **8 Hours**

This unit provides a critical analysis of the conceptual and theoretical foundations of new media, ICT4D, and digital development. It outlines the historical progression of media technologies and investigates essential concepts for development communication.

- Definitions: New Media, ICT4D, Digital Development
- Historical evolution of media technologies

- Theories of Development Communication (Diffusion of Innovations, Participatory Communication)
- Case studies: e-health, e-education, e-governance initiatives

Unit II: New Media for Social Change 8 Hours

This unit provides a critical examination of the transformative influence of new media within modern society. It investigates the historical development of digital platforms, the effects of social media on traditional media, community engagement, and the spread of information for social change.

- Salient features and advantage of new media over traditional media.
- History and evolution of new media and problems of access
- Social media and their impact on radio TV and Newspapers.
- Role of social media in mobilizing communities
- Social media for information dissemination, public awareness, and civic engagement
- Digital activism: hashtags, online petitions, and virtual protests

Unit III: AI and Participatory Development 8 Hours

This unit investigates the incorporation of AI and digital technologies in participatory development, highlighting the importance of community involvement, digital inclusion, and accessibility. It analyses the use of AI in various sectors while critically evaluating future prospects, challenges, and ethical implications within development contexts.

- Community engagement using digital and AI tools
- Digital literacy and inclusive AI adoption
- Digital inclusion, accessibility & marginalized groups
- Applications of AI in development: poverty prediction, climate change, healthcare -
- AI for health, agriculture, education, governance and public administration
- AI for disaster management and crisis communication
- AI for SDGs (UN Sustainable Development Goals)
- Future AI in development: opportunities and challenge

Unit IV: Ethics, Governance, and Policy in AI and New Media 6 Hours

This unit provides a critical analysis of the ethical, social, and regulatory aspects of AI and new media in the context of development. It addresses various issues such as accountability, data protection, misinformation, as well as the national and international frameworks that govern the responsible and secure utilization of emerging technologies.

- AI ethics: fairness, transparency, accountability, bias mitigation
- Data protection, privacy, and digital rights and responsible data use
- AI safety, security, and risk assessment
- Virtual Reality (VR) and Augmented Reality (AR) in development applications
- Deepfakes, misinformation & content authenticity

- Social, cultural, and economic impacts of AI and new media technologies
- National and international AI strategies and regulatory frameworks

PRACTICAL
(Credits 2, Hours 60)

- Design a digital campaign on any social or development issue using hashtags, storytelling, and community engagement.
- Evaluate real-world examples of e-health, e-education, e-governance, or AI-based development projects
- Analysing an AI or social media intervention for fairness, privacy, bias, and compliance with national/international policies.
- Identify and analyze some examples of misinformation or deepfakes on social media and propose strategies to verify content authenticity.

Essential Readings

Unit - I

- Heeks, R. (2018). *Information and communication technology for development (ICT4D)* (3rd ed.). Routledge.
- Servaes, J. (2015). *Communication for development and social change* (2nd ed.). Sage Publications.
- Narayan, S. S., & Narayanan, S. (Eds.). (2016). *India connected: Mapping the impact of new media*. SAGE Publications India.

Unit - II

- Ihsaniyati, H., Sarwoprasodjo, S., Muljono, P., & Gandasari, D. (2023). The use of social media for development communication and social change: A review. *Sustainability, 15*(3), 2283. https://doi.org/10.3390/su15032283
- Narayan, S. S., & Narayanan, S. (Eds.). (2016). *India connected: Mapping the impact of new media*. SAGE Publications India.
- Khalasa, N., et al. (2025). *Digital pulse: Shaping the future of media and communication*. Bhumi Publishing.

Unit - III

- Penh, B. (2025). AI-powered social media for development in low- and middle-income countries. *Media and Communication, 13*. https://doi.org/10.17645/mac.9577
- Sanyal, K., & Chakrabarti, R. (2020). *Artificial intelligence and India*. Oxford University Press.

Unit - IV

- Batool, A., Zowghi, D., & Bano, M. (2024). Responsible AI governance: A systematic literature review. *arXiv*. https://arxiv.org/abs/2401.10896
- Giralt Hernández, E. (2024). Towards an ethical and inclusive implementation of artificial intelligence in organizations: A multidimensional framework. *arXiv*. https://arxiv.org/abs/2405.01697

- Hogenhout, L. (2021). A framework for ethical AI at the United Nations. *arXiv*. https://arxiv.org/abs/2104.12547

Suggested Readings

- Beniwal, A. (Ed.). (2023). *Artificial intelligence, ethics, and the digital society: Pathways to sustainable development*. Deep Science Publishing.
- Floridi, L. (Ed.). (2021). *Ethics, Governance, and Policies in Artificial Intelligence*. Springer
- Kak, S. (2024). *The Age of Artificial Intelligence*. Garuda Prakashan.
- Liu, Z., & Zheng, Y. (2022). *AI Ethics and Governance: Black Mirror and Order*. Springer
- Mishra, S. (2021). Digital Cultures (1st ed.). Routledge. https://doi.org/10.4324/9781003155225
- Rainer Mühlhoff. (2021). *The ethics of AI: Power, critique, responsibility*. Bristol University Press.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
STATISTICS AND DATA MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Statistics and Data Management	**4**	**3**	**0**	**1**	**As per admission requirements**	

Learning Objectives

- To develop understanding of fundamental and advanced statistical concepts used in research and data analysis.
- To enable students to apply descriptive and inferential statistics for real-world decision-making.
- To strengthen ability to formulate hypotheses, select appropriate statistical tests, and interpret outputs.
- To prepare students for quantitative research, industry analytics, and academic data projects.
- To train students in using Excel and SPSS for data handling, visualization, and interpretation.

Learning Outcomes

The students would be able to:

- Explain key concepts in descriptive and inferential statistics.
- Organize, clean, and summarize datasets using appropriate statistical tools.
- Apply probability distributions, correlation, regression, and hypothesis testing.
- Use Excel and SPSS for data visualization, statistical testing, and reporting.
- Interpret statistical outputs and draw valid conclusions for research decisions.
- Design and execute quantitative data analysis workflows independently.

THEORY
(Credits 3; Hours 45)

UNIT I: Introduction and descriptive Statistics **12 Hours**

This unit will introduces the foundations of statistics and techniques for summarizing and describing data.

- Definition, scope, and applications of statistics
- Types of data: qualitative and quantitative
- Scales of measurement
- Classification & tabulation of data
- Graphical and visual representations
- Measures of central tendency: mean, median, mode
- Measures of dispersion: range, variance, standard deviation, coefficient of variation

- Skewness and kurtosis: meaning and interpretation

UNIT II: Probability and Probability Distributions **10 Hours**

This unit explores probability concepts and major statistical distributions.

- Basic probability concepts: Addition & multiplication theorems
- Random variables: discrete and continuous
- Binomial and Normal distributions
- Sampling theory & sampling distributions
- Central Limit Theorem

UNIT III: Correlation and regression **8 Hours**

This unit focuses on analysing relationships between variables.

- Correlation: Pearson and Spearman correlation
- Simple linear regression: model, estimation, interpretation
- Multiple linear regression: assumptions, multicollinearity, model building

UNIT IV: Hypothesis Testing and Non-Parametric Methods **15 Hours**

This unit introduces hypothesis testing frameworks and non-parametric alternatives for non-normal data.

- Concept of hypothesis: null & alternative
- Types of errors, significance levels, p-value
- Parametric tests:
  - z-test
  - t-test (one sample, independent, paired)
  - Chi-square test
- Non-parametric tests:
  - Mann–Whitney U test
  - Wilcoxon signed-rank test
  - Kruskal–Wallis test
- Interpretation and reporting of statistical results
- Research Conclusion and recommendations

Practical
(Credits 1; 30 hours)

1. Data Entry, Coding & Cleaning: Importing data, handling missing values, variable labels, Excel formulas.
2. Descriptive Statistics & Visualization: Mean, Standard Deviation, frequency tables, histograms, boxplots (Excel + SPSS).
3. Cross-Tabulation & Chi-Square Test: PivotTables in Excel; Crosstabs in SPSS.
4. Correlation Analysis: Pearson & Spearman correlations; scatterplots.
5. Simple Linear Regression: Trendline in Excel; Regression output in SPSS.

6. Multiple Regression: Model summary, coefficients, interpretation using SPSS.
7. t-Tests: Independent, paired, and one-sample t-tests in SPSS.
8. ANOVA (One-way & Two-way): Running ANOVA and post-hoc analysis.
9. Non-Parametric Tests: Mann-Whitney, Wilcoxon, Kruskal–Wallis in SPSS.
10. Report Generation & Interpretation
11. Preparing APA-style tables, graphs, and interpretations in Excel/SPSS.

Essential Readings

UNIT - I

- Bluman, A. G. (2018). *Elementary statistics: A step by step approach* (10th ed.). McGraw-Hill Education.
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.). CreateSpace Independent Publishing Platform.
  (Available at http://www.openintro.org/stat/textbook.php)
- Healey, J. F. (2016). *Statistics: A tool for social research* (10th ed.). Cengage Learning.
- Levin, R. I., Rubin, D. S., Rastogi, S., & Siddiqui, M. H. (2017). *Statistics for management* (8th ed.). Pearson Education India.

UNIT- II

- Devore, J. L. (2016). *Probability and statistics for engineering and the sciences* (9th ed.). Cengage Learning.
- Gupta, S. C., & Kapoor, V. K. (2019). *Fundamentals of mathematical statistics* (12th ed.). Sultan Chand & Sons.
- Montgomery, D. C., & Runger, G. C. (2018). *Applied statistics and probability for engineers* (7th ed.). Wiley.

UNIT - III

- Kutner, M. H., Nachtsheim, C. J., Neter, J., & Li, W. (2019). *Applied linear statistical models* (6th ed.). McGraw-Hill Education.
- Wooldridge, J. M. (2020). *Introductory econometrics: A modern approach* (7th ed.). Cengage Learning.

UNIT IV

- Field, A. (2018). *Discovering statistics using IBM SPSS statistics* (5th ed.). Sage Publications.
- Gibbons, J. D., & Chakraborti, S. (2016). *Nonparametric statistical inference* (5th ed.). CRC Press.

Suggested Readings

- Field, A. (2025). *Discovering Statistics Using IBM SPSS Statistics* (6th ed.). Sage.
- Kalyanaraman, K., Ramanathan, H. N., & Harikumar, P. N. (2025). *Statistical Methods for Research: A Step-by-Step Approach Using IBM SPSS*. Atlantic Publishers.
- Healey, J. F., & Donoghue, C. (2021). *Statistics: A Tool for Social Research and Data Analysis* (11th ed.).

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

DISCIPLINE SPECIFIC CORE COURSE

CONSUMER BEHAVIOUR AND SUSTAINABLE DEVELOPMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Consumer Behaviour and Sustainable Development	**4**	**3**	**1**	**0**	**As per admission requirements**	**Should be aware of basics of Communication Concepts & Theories**

Learning Objectives

1. To understand the concept and theories of consumption and its linkages with production, distribution, and policy perspective.
2. To develop an understanding of consumption behaviour of individuals, families and communities in diverse socio-economic contexts.
3. To familiarise students with the linkages between consumption, environment, poverty, resources used and sustainable development.
4. To understand the role of people's initiatiatives, nationally and globally in promoting sustainable consumption .
5. To introduce communication and SBCC perspectives for promoting sustainable and responsible consumption.

Learning Outcomes

After completing this course, students will be able to:

1. Understand the meaning ,concept and theories of consumption and it's relationship with production , public policy and resource use
2. Analyse the inter-linkages between consumption practices, resource use and sustainable development at local, national and global levels in preservation of people's rights and sustainable consumption
3. Critically examine consumer rights, responsibilities, protections and public policy frameworks.
4. Understand the role of people's initiatives nationally and globally in preservation of people's right for sustainable consumption

THEORY

(Credits 3; Hours 45)

UNIT I: Understanding Consumption Behaviour of Families and Communities 12 Hours

This unit introduces the meaning and dimensions of consumption, locating families and communities as key consumption units, and exploring factors shaping consumption in different socio-economic and cultural settings.

- Consumption: concept ,theories, linkages with production, distribution,public policy resource use; implications for families and communities.
- Determinants of consumption behaviour: economic, cultural, social, psychological and technological factors
- Historical and contemporary patterns of consumption: local, national and global perspectives
- Differences in consumption practices: rural–urban, North–South, class, gender and life-cycle perspectives
- Theories and models for understanding consumer behaviour (brief overview)
- Production, distribution and marketing strategies and their implications for consumption choices

UNIT II: Consumption, Health, Environment, Poverty and Sustainable Development 12 Hours

This unit focuses on the linkages between consumption, resource use and sustainable development, highlighting challenges of over-consumption, environmental degradation and inequity.

- Consumption and sustainable development: linkages between consumption, production, public policy health,environment, resource use and lifestyle
- Sustainable Development Goals (SDGs): goals and targets related to responsible consumption and production; environment, health, poverty, literacy etc. (SDG 12)
- Carbon footprint, lifestyle, and impact on environment
- Indicators related to consumption, inequality and sustainability: national and global overviews
- Case illustrations of unsustainable vs. sustainable consumption practices in food, clothing, housing, mobility, digital products

UNIT III: Consumers, Rights, Responsibilities and Public Policy 11 Hours

This unit examines consumers as rights-bearing citizens, the policy and legal frameworks governing consumption, and the role of consumer movements.

- Indian families as consumption units: vulnerabilities and constraints
- Problems faced by consumers in India: rural, urban and tribal perspectives, Challenges and opportunities in emerging economies
- Consumer protection in India: history and evolution of the consumer movement
- Consumer rights and responsibilities: laws, safeguards and grievance mechanisms (overview)
- Theories and models of consumer behaviour
- Role of consumer organisations, civil society and citizen groups – national, regional and global

UNIT IV: Communication, SBCC and Sustainable Consumption 10 Hours

This unit introduces behavioural and communication perspectives for promoting sustainable consumption and responsible consumer behaviour.

- Behaviour Change Communication (BCC) and Social and Behaviour Change Communication (SBCC) perspectives on consumption
- Advocacy and campaigns for sustainable consumption and public interest, people movements in protection of their righs (illustrative national/global campaigns)
- Elements, tools and techniques for consumer education and awareness (mass media, social media, community media, IEC)
- Networking, lobbying and mobilising pressure groups for sustainable consumption and policy advocacy

- Designing simple SBCC-based ideas for responsible consumption among youth, families and communities

TUTORIAL
(Credits 1; Hours 15)

- Mapping Personal Consumption: Recording and analysing students' own weekly consumption patterns (food, clothing, mobility, digital use), identifying unsustainable practices and alternatives.
- Case Study Analysis: Case studies on sustainable vs. unsustainable consumption (e.g., fast fashion, plastic usage, food waste, energy use).
- Policy & Campaign Review: Review of selected national/global campaigns and policies on sustainable consumption; group presentations.
- Consumer Rights Exercise: Reading and summarising key consumer protection provisions and applying them to real or simulated cases.
- Designing a Micro SBCC Concept: Group activity to conceptualise a small SBCC idea (poster/social media reel/community event) for promoting one sustainable consumption practice in the local context.
- Consumer choices and behaviours: Identify the consumers determine eco-friendliness of products.
- Designing for sustainability: Process, product and systems innovation – improved production processes, eco-friendly products, innovative low-impact technologies, supply chain management

Essential Readings

UNIT-I

- Stillerman, J. (2015). *The sociology of consumption: A global approach*. Polity Press.
- Reisch, L. A., & Thøgersen, J. (Eds.). (2016). *Handbook of research on sustainable consumption*. Edward Elgar Publishing.
- Mukherjee, S., & Banerjee, N. (2019). Consumption patterns, inequality and development in India. *Economic and Political Weekly, 54*(44), 45–53.
- Narayan, S. S., & Narayanan, S. (2016). *India connected: Mapping the impact of new media*. SAGE Publications India..

UNIT- II

- Reisch, L. A., & Thøgersen, J. (Eds.). (2016). *Handbook of research on sustainable consumption*. Edward Elgar Publishing.
- United Nations Environment Programme. (2017). *Sustainable consumption and production: A handbook for policymakers*. UNEP.
- Government of India, NITI Aayog. (2019). *India's voluntary national review on the implementation of the Sustainable Development Goals*. NITI Aayog.

UNIT- III

- Government of India. (2019). *The Consumer Protection Act, 2019*. Ministry of Consumer Affairs, Food & Public Distribution.
- Rao, S., & Bansal, S. (2020). Consumer protection and grievance redressal mechanisms in India. *Indian Journal of Public Administration, 66*(2), 214–229.

- Sharma, A., & Gupta, R. (2017). Consumer awareness and protection in emerging Indian markets. *Journal of Consumer Policy, 40*(3), 343–360. https://doi.org/10.1007/s10603-017-9349-5

UNIT- IV

- McKenzie-Mohr, D. (2018). *Fostering sustainable behavior: An introduction to community-based social marketing* (4th ed.). New Society Publishers.
- UNICEF. (2020). *Social and behavior change communication for sustainable development*. UNICEF.

Kumar, R., & Purohit, H. (2019). Role of communication strategies in promoting sustainable consumption in India. *Media Watch, 10*(3), 485–499.

Suggested Readings

- FICCI/UNEP, 2015. Designing a Sustainable Financial System for India: Interim Report. Available at: http://ficci.in/spdocument/20546/UNEP-Interim-Report.pdf
- UNDP projects on environmental aspects related to SCP in India; Available at: http://www.in.undp.org/content/dam/india/docs/UNDP%20Fact%20Sheet%20-%20MEFCC.pdf
- UNIDO projects on cleaner production topics; Available at: http://www.unido.org/en/where-wework/asiaandthepacific/selected-projects.html

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

DISCIPLINE SPECIFIC ELECTIVE

FOOD SYSTEMS & NUTRITION SECURITY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
FOOD SYSTEMS & NUTRITION SECURITY	**4**	**3**	**0**	**1**	**As per admission requirements**	**Should be aware of basic concepts of food & nutrition**

Learning Objectives

- To Understand the concepts, components, and functioning of food systems and their influence on nutrition, health, and sustainability.
- To analyze national and international policies, programs, and interventions for improving food and nutrition security.
- To evaluate the roles of key national and international organizations in combating malnutrition and supporting nutrition security initiatives.

Learning Outcomes

The students would be able:

- Identify and classify forms of food insecurity and understand the factors contributing to nutritional insecurity at household and community levels.
- Gain knowledge of community-based nutrition interventions and design strategies for behavior change and nutrition education.
- Critically evaluate policies and programs and assess their impact on nutrition outcomes.

Unit I: Introduction to food systems **10 hours**

This unit provides an overview of food systems, explores the interconnections between agriculture, environment, nutrition, and health, and compares traditional and modern food systems. Elucidating the role of key stakeholders in shaping food outcomes. The unit also highlights food system outcomes and explains how these are measured using national and international indicators.

- Definition and components of food systems (production, processing, distribution, consumption)
- Inter linkages between agriculture, environment, nutrition, and health
- Traditional vs. modern food systems
- Stakeholders: farmers, consumers, private sector, government, NGOs
- Food system outcomes: availability, access, utilization, stability
- Indicators of Food system : National and international indicators

Unit II: Food Security and Nutrition Security 12 hours

This unit elucidates the concept and dimensions of food security, investigates the various forms of food insecurity along with their determinants. Additionally, the unit assesses food security policies in India, household coping mechanisms, and global trends in malnutrition, which encompass undernutrition, micronutrient deficiencies, and overweight/obesity.

- Introduction, forms of food insecurity: Hunger, poverty, chronic hunger
- Conceptual framework of food security: availability of food, accessibility of food, consumption & utilization
- Food security concept, types of food insecurity; poverty, hunger and malnutrition
- Factors leading to food & nutritional insecurity in India, household food insecurity and coping strategies
- Determinants of Nutrition Security: Biological, socioeconomic, cultural, environmental factors, Gender and nutrition
- Evidence on global malnutrition patterns: undernutrition, micronutrient deficiencies, overweight/obesity

Unit III: Policies and intervention for Food & Nutrition Security 10 hours

This unit conducts a critical examination of policies and interventions designed to ensure food and nutrition security on both national and international scales. It offers a comprehensive analysis of significant Indian initiatives and global frameworks. Additionally, it explores policies that affect agricultural production, subsidies, and food pricing, assessing their impact on dietary quality, accessibility, and overall nutrition security.

- National Polices: National Food Security Act (NFSA), Public Distribution System (PDS), ICDS, POSHAN Abhiyan, Mid-Day Meal Scheme
  International policies: Right to Food, Sustainable Food Policy frameworks
- FAO Voluntary Guidelines on Food Security and Nutrition and WHO Nutrition Guidelines
- UN Sustainable Development Goals (SDG 2: Zero Hunger, SDG 3: Good Health)
- Policies affecting crop production, subsidies, and food prices and its impact on nutritional outcomes

Unit IV: Community Health & Nutrition 13 hours

This unit provides an integrated understanding of the role of India's traditional knowledge systems promoting community health & nutrition. It explores diet diversity across the lifecycle, the role of organic and nutri-sensitive farming systems, and the importance of home, kitchen, and herbal gardens in ensuring household nutrition security. It also touches upon the role of nutrition education and behavior change processes**.**

- Indian Knowledge Systems & Traditional Foods
- Diet Diversity across lifecycle
- Nutri-Sensitive Integrative Farming Systems (NSIFS),Organic Farming & Natural Farming
- Kitchen, Home & Herbal Garden
- Role of bio-diverse farming in nutrient-rich food production
- Farm-to-plate approaches for improved household nutrition

- Valorization and Food Waste Management
- Successful Indian models of nutrition-sensitive agriculture
- Role of nutrition in disease prevention and health promotion
- Nutrition education and behavior change strategies
- Role of National organizations in combating malnutrition: ICMR, ICAR, NIN.
- Role of International organizations in combating malnutrition: CARE, UNICEF, WHO, FAO, ICRISAT.

PRACTICAL
(Credits 1; Hours 30)

- Analyze coverage and impact of nutrition programs such as ICDS, Mid-Day Meal Scheme, or POSHAN Abhiyan.
- Prepare information materials (posters, pamphlets) for awareness campaigns on healthy diets and food security.
- Develop and implement nutrition education sessions and behavior change communication strategies for a target group.
- Visits to community nutrition centers, ICDS centers, local farms, or PDS outlets to observe real-world implementation of policies and programs.
- Interaction with farmers, program staff, and beneficiaries to understand practical challenges in food and nutrition security.
- Documentation of Traditional Foods: Conduct field visits or family interviews to document traditional local recipes, their cultural significance, and nutritional benefits; create a visual or digital compilation.
- Diet Diversity Assessment
- Nutri-Sensitive Farming Mini-Project: Visit an organic, natural, or NSIFS farm to observe practices; prepare a short report on nutrient-dense crops, soil health methods, and sustainability components.

Essential Readings

UNIT -I

- FAO, IFAD, UNICEF, WFP, & WHO. (2021). *The state of food security and nutrition in the world 2021: Transforming food systems for food security, improved nutrition and affordable healthy diets for all*. FAO. https://doi.org/10.4060/cb4474en
- HLPE. (2017). *Nutrition and food systems*. High Level Panel of Experts on Food Security and Nutrition, FAO.
- Pingali, P., Aiyar, A., Abraham, M., & Rahman, A. (2019). *Transforming food systems for a rising India*. Palgrave Macmillan.

UNIT -II

- FAO, IFAD, UNICEF, WFP, & WHO. (2023). *The state of food security and nutrition in the world 2023*. FAO.
- Gillespie, S., Haddad, L., Mannar, V., Menon, P., & Nisbett, N. (2015). The politics of reducing malnutrition: Building commitment and accelerating progress. *The Lancet, 382*(9891), 552–569. https://doi.org/10.1016/S0140-6736(13)60842-9

- Swaminathan, M. S., & Bhavani, R. V. (2019). Food production & availability—Essential prerequisites for sustainable food security. *Indian Journal of Medical Research, 149*(6), 681–690. https://doi.org/10.4103/ijmr.IJMR_2078_18

UNIT- III

- Government of India. (2019). *The National Food Security Act (NFSA), 2013: Updated operational guidelines*. Ministry of Consumer Affairs, Food & Public Distribution.
- NITI Aayog. (2021). *POSHAN Abhiyaan: Strategy and progress report*. Government of India.

UNIT - IV

- CARE International. (2020). *Community-based nutrition programs and approaches*. CARE.
- Whitney, E., & Rolfes, S. R. (2020). *Understanding nutrition* (15th ed.). Cengage Learning.
- Aggarwal, A., & Drewnowski, A. (2019). The role of traditional food systems in improving nutrition security in India. *Current Developments in Nutrition, 3*(3), nzz003. https://doi.org/10.1093/cdn/nzz003
- Swaminathan, M. S. (2016). From Green Revolution to Evergreen Revolution: Pathways to sustainable nutrition security in India. *Current Science, 109*(3), 456–463.

Suggested readings

- Ministry of Women and Child Development, Government of India. *Integrated Child Development Services (ICDS) Scheme Guidelines*.
- Ministry of Health and Family Welfare, Government of India. *POSHAN Abhiyaan: National Nutrition Mission*.
- Ministry of Education, Government of India. *Mid-Day Meal Scheme Guidelines*.
- Indian Council of Medical Research (ICMR). (2020). *Nutrient requirements and recommended dietary allowances for Indians*. ICMR.
- National Institute of Nutrition (NIN). (2020). *Community nutrition and health reports*. NIN.
- Food and Agriculture Organization (FAO). (2004). *Voluntary guidelines to support the progressive realization of the right to adequate food in the context of national food security*. FAO.
- World Health Organization (WHO). (2020). *Nutrition guidelines and global nutrition targets*. WHO.

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

DISCIPLINE SPECIFIC ELECTIVE

HUMAN CENTRED DESIGN & INNOVATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Human Centred Design & Innovation	4	3	0	1	As per admission requirements	Should be aware of basic concepts of design

Learning Objectives

1. To understand and apply design thinking and Human-Centered Design (HCD) principles to drive social and business innovation
2. To develop skills in user research, ideation, prototyping, and testing solutions for real-world challenges
3. To manage change initiatives using participatory and inclusive approaches
4. To analyze the design considerations of traditional and contemporary oral and visual media

Learning Outcomes

The students would be able to:

1. Apply UNICEF's HCD framework to design and implement user-centered solutions.
2. Design, prototype, and test innovative and sustainable solutions for diverse challenges.
3. Lead and manage change initiatives using participatory and inclusive approaches.
4. Understand the design considerations of traditional and contemporary oral & visual media and create innovative media.

THEORY
(Credits 3; Hours 45)

UNIT I: Foundations of Human Centred Design 12 Hours

This unit explores the fundamentals of Human Centred Design touching upon key concepts and theories

- Definitions, Concepts, and Theories of Design for Innovation & Change
- Elements of Art & Principles of Design
- Introduction to Design Thinking: Principles and Process
- Evolution of Human-Centered Design and its intersection with development communication
- Core principles of HCD (empathy, iteration, co-creation, problem reframing)
- Introduction to steps of Human Centred Design Thinking
- Inclusion, and Participatory Design in HCD

- Understanding development ecosystems: stakeholders, power dynamics, and communication flows
- Ethics of participatory design in vulnerable communities
- Case studies of HCD in social innovation and development projects

UNIT II: Innovation & Change **10 Hours**

This unit discusses the fundamentals of innovation strategies, and change management frameworks to drive sustainable and impactful transformations in organizations and society.

- Theories of Creativity and Innovation
- Systems Thinking in Innovation
- Innovation Management and Organizational Change
- Behavioral Science and Change Adoption
- Business Model Innovation and Value Proposition
- Ethics and Sustainability in Innovation

UNIT III: Groundwork for effective Design **12 Hours**

This unit highlights the potential of research, ideation and prototyping for an effective design strategy. It explores the key imperatives for ensuring efficacy in message design to drive change.

- Research plans for design and development contexts
- Ethnographic and participatory research methods (interviews, observations, shadowing, immersion)
- Tools for insight generation: empathy maps, journey maps, stakeholder maps
- Cultural sensitivity and inclusion strategies in fieldwork
- Synthesizing qualitative data into user needs, motivations, and pain points
- Ideation frameworks
- Low-fidelity vs. high-fidelity prototyping (storyboards, mock-ups, role-plays, digital prototypes)
- Rapid experimentation and feedback loops
- Documentation and communication of design rationale
- Message design: Principles, Approaches and Appeals
- Audience Analysis

UNIT IV: Media for effective Design **11 Hours**

This unit highlights the potential of varied types of media that can be used to bring about change. It explores the continuum of traditional to contemporary media and its efficacy in harnessing change.

- Media Classification
- Methods for using media effectively
- Traditional Media for Change: Puppetry, Street Theatre, Games, Scrolls etc
- Digital Media for Change: Social Media, Apps, Digital billboards, Dashboards etc., Pitching and Storytelling for Innovation
- Strategy planning, implementation & evaluation

PRACTICAL
(Credits 1; Hours 30)

- Ideation Techniques: Brainstorming, SCAMPER, and Mind Mapping
- Rapid Prototyping
- Minimum Viable Product (MVP) Development
- User Testing and Iterative Design
- Real-world Problem-Solving through Live Projects
- Development of Design/Innovation Kit: Traditional Media
- Development of Design/Innovation Kit: Contemporary Media
- Innovation Metrics and Performance Evaluation
- Creating design using open source software and Artificial Intelligence (AI)

- Presenting an Innovation Solution

Essential Readings

UNIT- I

Brown, T., & Katz, B. (2019). *Change by design: How design thinking transforms organizations and inspires innovation* (Rev. ed.). New York, NY: Harper Business.

Sanders, E. B. N., & Stappers, P. J. (2018). Co-creation and the new landscapes of design. *CoDesign*, 14(2), 1–16. https://doi.org/10.1080/15710882.2018.1464921

Thomas, P. N. (2019). *Communication and development: Freirean perspectives*. New Delhi, India: Sage Publications.
(For participatory design, ethics, power, and development ecosystems)

UNIT- II

Christensen, C. M., Raynor, M. E., & McDonald, R. (2015). What is disruptive innovation? *Harvard Business Review*, 93(12), 44–53.

Lewrick, M., Link, P., & Leifer, L. (2020). *The design thinking toolbox: A guide to mastering the most popular and valuable innovation methods*. Hoboken, NJ: Wiley.

Thaler, R. H., & Sunstein, C. R. (2021). *Nudge: Improving decisions about health, wealth, and happiness* (Updated ed.). New Haven, CT: Yale University Press.

UNIT- III

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). Thousand Oaks, CA: Sage Publications.

Martin, R. L. (2019). *The design of business: Why design thinking is the next competitive advantage*. Boston, MA: Harvard Business Review Press.

Singhal, A., & Papa, M. J. (2016). *Organizing for social change: A dialectic journey of theory and praxis*. New Delhi, India: Sage Publications.
(Message design, audience analysis, communication for change)

UNIT- IV

Melkote, S. R., & Steeves, H. L. (2015). *Communication for development: Theory and practice for empowerment and social justice* (2nd ed.). New Delhi, India: Sage Publications.

Rao, S. (2020). Traditional media, culture, and development communication in India. *Journal of Creative Communications*, 15(1), 21–35. https://doi.org/10.1177/0973258619892356

Singhal, A., Cody, M. J., Rogers, E. M., & Sabido, M. (Eds.). (2015). *Entertainment-education and social change: History, research, and practice*. New York, NY: Routledge.

Suggested Readings

- Tiwari, S. R., & Swarup, R. R. (2024). *Design thinking: A comprehensive textbook*. Wiley India.
- Agarwal, A. (2024). *Design thinking: A framework for applying design thinking in problem solving*. Cengage India.
- Balagurusamy, E. (2024). *Design thinking: A beginner's perspective*. McGraw Hill Education India.
- Lal, D. M. (2021). *Design thinking – Beyond the sticky notes*. SAGE Publications India.

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

DISCIPLINE SPECIFIC ELECTIVE
SOCIAL ENTREPRENEURSHIP

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Social Entrepreneurship	4	3	1	0	As per admission requirements	

Learning Objectives

- To understand the core concepts, principles, and relevance of social entrepreneurship in developmental contexts.
- To analyze community problems and apply participatory communication approaches for designing social enterprise solutions.
- To develop practical skills in planning, implementing, and evaluating sustainable social enterprise models.

Learning Outcomes

The students would be able to:

- Demonstrate a comprehensive understanding of social entrepreneurship concepts, models, and global/national trends.
- Conduct problem analysis and needs assessment to formulate innovative social enterprise ideas addressing community issues.
- Design and implement communication and outreach strategies to engage beneficiaries, partners, and funders effectively.
- Prepare and present a detailed social enterprise project proposal including organizational structure, budgeting, marketing, and sustainability plan.

THEORY
(Credits 3; Hours 45)

UNIT I: Introduction to Social Entrepreneurship 10 Hours

This unit provides foundational understanding of social entrepreneurship—its meaning, evolution, and relevance in the development sector. It covers differences between social, commercial, and non-profit models, along with global and Indian perspectives.

- Concept of Social entrepreneur & entrepreneurship –Need, Major Functions and Areas of Social Entrepreneurship.
- Evolution and historical development of social entrepreneurship globally.
- Role of social entrepreneurs as innovators and change agents.
- Significance of social entrepreneurship in India.
- Differences between social, commercial, and non-profit enterprise models.
- Overview of hybrid and mission-driven social enterprise models.

UNIT II: Innovation, Creativity, and Social Enterprise Design 10 Hours

This unit emphasizes the role of innovation and creativity in shaping effective social enterprises. Students learn approaches such as design thinking, human-centered design, frugal innovation, and community-based co-creation.

- Importance of innovation and creativity in developing impactful social enterprises.
- Frugal innovation and low-cost solution development for resource-limited settings.
- Human-centered design and community-driven innovation approaches.
- The social entrepreneurial ecosystem: institutions, markets, communities and environment
- Prototyping, testing, and improving solutions for sustainable and scalable social enterprise design.
- Social Entrepreneurial Role Models- Bunker Roy, Jeroo Billimoria, Anshu Gupta, Vijaya Mahajan, Azim Premji.

UNIT III: The Social Entrepreneurship Process 12 Hours

This unit introduces key models explaining how social entrepreneurship unfolds, including the Timmons Model, the PCDO (The People, Context, Deal, and opportunity) Framework, the Case Model, and the Social Entrepreneurship Framework. It explores how opportunities emerge across the public, private, and voluntary sectors.

- The Timmons Model of the Entrepreneurship Process, The PCDO (The People, Context, Deal, and opportunity) frame work,
- The Case Model, The Social Entrepreneurship Frame work.
- Sources of Social Entrepreneurship -Public Sector, Private Sector, Voluntary Sector.
- Social Entrepreneurship in Practice: The Grameen Bank (GB), The Self Employment Women's Association (SEWA), Aravind Eye Hospital, Barefoot College, Bhartia Samruddhi Investment &Consulting Services (BASIX),Narayana Hrudayalaya Institute of Medical Sciences, Technology Informatics Design Endeavour (TIDE)

UNIT IV: Social Enterprise Project Development and Applications 13 Hours

The unit includes activities such as problem diagnosis, stakeholder consultations, pilot testing small interventions, and preparing a comprehensive social enterprise proposal.

- Identifying a community problem for social enterprise development.
- Feasibility & Viability Analysis
- Conducting stakeholder consultations to gather insights and validate needs.

- Developing solution ideas and selecting a feasible social enterprise model.
- Preparing components of a social enterprise proposal: value proposition, objectives, and target groups.
- Planning operational strategies, resource requirements, and budgeting.
- Pilot testing small-scale interventions and documenting findings.
- Designing an impact plan with indicators for monitoring and evaluation.
- Final preparation and presentation of a comprehensive social enterprise project proposal.

TUTORIAL
(Credits 1; Hours 15)

- Field-based identification of a community problem and documentation of needs.
- Stakeholder consultations and analysis to validate issues and explore opportunities.
- Application of design thinking and human-centered design to generate solution ideas.
- Development of a Social Business Model Canvas or social enterprise framework.
- Creation of basic prototypes or small-scale tests of proposed solutions.
- Compilation and presentation of a comprehensive social enterprise project proposal.

Essential Readings

UNIT- I

- Doherty, B., Meehan, J., & Meehan, B. (2024). *Management for social enterprise*. SAGE Publications.
- Bornstein, D., & Davis, S. (2016). *Social entrepreneurship: What everyone needs to know*. Oxford University Press.
- Datta, P. B., & Gailey, R. (2016). Empowering women through social entrepreneurship: Case study of a women's cooperative in India. *Entrepreneurship Theory and Practice, 36*(3), 569–587.

UNIT- II

- Mulgan, G. (2019). *Social innovation: How societies find the power to change*. Policy Press.
- Doherty, B., Haugh, H., & Lyon, F. (2016). Social enterprises as hybrid organizations: A review and research agenda. *International Journal of Management Reviews, 16*(4), 417–436. https://doi.org/10.1111/ijmr.12028
- Gupta, A. K. (2016). *Grassroots innovation: Minds on the margin are not marginal minds*. Penguin Random House India.

UNIT- III

- Dees, J. G., Emerson, J., & Economy, P. (2018). *Enterprising nonprofits: A toolkit for social entrepreneurs* (Rev. ed.). John Wiley & Sons.
- Mahajan, V. (2017). *Financing poor: Lessons from Indian experiences*. Sage Publications India.

UNIT- IV

- Doherty, B., Meehan, J., & Meehan, B. (2024). *Management for social enterprise*. SAGE Publications.
- British Council. (2016). *Social value economy: A survey of the social enterprise landscape in India*. British Council India.

Recommended Readings

- Deakins, D., & Scott, J. M. (2024). *Entrepreneurship: A contemporary and global approach* (2nd ed.). SAGE Publications.
- Haski-Leventhal, D. (2021). *Social entrepreneurship and innovation: International case studies and practice*. SAGE Publications.
- Kerlin, J. A. (Ed.). (2017). *Shaping social enterprise: Understanding institutional context and influence*. Emerald Publishing.
- Chandra, Y., & Shang, L. (2023). *Social entrepreneurship in Asia: Sustainability, innovation, and impact*. Routledge.
- Phillips, W., Lee, H., Ghobadian, A., O'Regan, N., & James, P. (2015). Social innovation and social entrepreneurship: A systematic review. *Group & Organization Management, 40*(3), 428–461.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

POVERTY, LIVELIHOOD SYSTEMS & SKILLING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Poverty, Livelihood Systems & Skilling	**4**	**3**	**1**	**0**	**As per admission requirements**	**Nil**

Learning Objectives

1. To develop an advanced understanding of the concepts, theories and measures of poverty and well-being in both national and global contexts.
2. To examine various livelihood systems and frameworks, with emphasis on vulnerability, resilience, and institutional influences.
3. To analyse skilling ecosystems, labour-market dynamics and policy interventions that shape employability and sustainable livelihoods.
4. To build students' capacity to design, implement and evaluate poverty-reduction, livelihood and skilling programmes using research tools and evidence-based approaches.

Learning Outcomes

The students would be able to:

1. Critically evaluate different poverty frameworks and apply appropriate measurement tools to assess poverty and welfare conditions.
2. Analyse and interpret livelihood strategies using the Sustainable Livelihoods Framework**,** identifying factors that influence vulnerability and resilience.
3. Assess and compare skilling policies, training programmes and labour-market interventions**,** with the ability to identify gaps and propose improvements.
4. Develop a policy brief that integrates poverty analysis, livelihood systems and skilling strategies using relevant data and research methods.

THEORY

(Credits 3; Hours 45)

Unit 1: Understanding Poverty and Well-being 9 Hours

This unit explores the conceptual foundations, determinants, patterns, and measurements of poverty and inequality. It encompasses global and national frameworks, multidimensional indicators, and socio-economic contexts that influence deprivation.

- Concepts of poverty: absolute, relative, chronic, and transient poverty
- Determinants of poverty and inequality: structural, demographic, and policy factors
- Approaches to poverty analysis: income-based, basic needs, social exclusion, capability approach

- Measurement tools: poverty lines, headcount ratio, poverty gap, MPI, vulnerability assessments
- Spatial and social dimensions of poverty: rural–urban differences, caste, gender, and regional variations
- Global and national poverty trends and policy debates

UNIT II: Livelihood Systems 13 Hours

This unit provides an understanding of various livelihood systems that operate across rural and urban contexts. It examines the nature of formal and informal sector livelihoods, different types of traditional and modern livelihood options, and the role of farming, non-farm activities, and wage labour in sustaining households.

- Formal and Informal Sector Livelihoods – Nature, characteristics, and differences.
- Types of Livelihoods – Traditional, modern, and sustainable livelihood options.
- Farming and Allied Activities – Crop cultivation, livestock, fisheries, sericulture, and horticulture.
- Non-Farm Activities – Rural artisanship, small-scale manufacturing, and micro-enterprises.
- Wage Labour – Agricultural labour, construction work, and casual/seasonal employment.
- Forest-Based Livelihoods – Collection of NTFPs (Non-Timber Forest Products), timber, firewood, and other forest resources.
- Migration-Based Livelihoods – Seasonal/long-term migration and its impact on income and households.
- Rural and Urban Livelihoods – Characteristics, differences, and employment patterns.
- Socio-Economic Zones, Industrial Policies & Women's Livelihood Opportunities – SEZs, industrial policy impacts, and schemes promoting women's employment and entrepreneurship.

Unit III: Labour Markets & Employability 10 Hours

This unit provides an understanding of labour market structures, workforce dynamics, and factors influencing employability in India. It examines the role of skills, technology, policies, and institutions in shaping employment opportunities. The unit also explores challenges, trends, and strategies for enhancing employability across sectors.

- Labour Market Structure and Characteristics – Formal vs. informal labour markets, workforce composition, demand–supply dynamics.
- Determinants of Employability – Skills, education, work experience, digital literacy, and soft skills.
- Technological Change and Future of Work – Impact of automation, AI, and digital transformation on employment patterns.
- Employment Policies and Labour Reforms – Key government initiatives, labour codes, and programmes promoting employment.
- Youth and Women Employability – Barriers, opportunities, career readiness, and inclusion strategies.
- Strategies for Enhancing Employability – Career guidance, vocational training, apprenticeships, industry linkages, and skill development initiatives.

Unit IV: Livelihood Interventions, Innovations, and Policy Frameworks 13 Hours

This unit provides an in-depth understanding of skilling frameworks, types and aspects of skill development, national skilling structures, and regulatory bodies in India.

- Livelihood promotion programmes in India: MGNREGA, NRLM, DAY-NULM, Start-Up India
- Financial inclusion and social protection mechanisms (Jan Dhan Yojana, SHGs, cooperatives)
- Innovations in livelihood development – FPOs, social enterprises, and digital platforms
- Linking livelihoods and skills to ESG, SDGs, and inclusive growth strategies
- Introduction to Skilling – Importance, relevance, and role of skills in employment and development.
- Types of Skilling – Technical/vocational skills, soft skills, life skills, digital skills, and entrepreneurial skills.
- National Skill Development Mission (NSDM) – Vision, objectives, institutional structure and components.
- Sector Skill Councils (SSCs) – Roles, industry partnership, National Occupational Standards (NOS) and Qualification Packs (QPs).
- NCVET & Regulatory Framework – Accreditation, quality assurance, certification standards in skilling ecosystem.
- AI for Skilling and Training Delivery – Use of AI tools for personalized learning, digital simulations, and adaptive training modules.

TUTORIAL
(Credits 1; Hours 15)

- Review two national or international skilling programmes and compare their design, accreditation models and outcomes.
- Conduct a livelihood analysis for a selected community/occupational group using the Sustainable Livelihoods Framework (SLF).
- PRA-based activities such as asset mapping, seasonal calendars (simulation exercises).
- Interview with a small-scale or informal worker, a short report identifying key needs, potential skill gaps, and suggest feasible employment or skilling opportunities that could enhance their livelihood.

Essential Readings

UNIT- I

- Alkire, S., Kanagaratnam, U., & Suppa, N. (2018). The global Multidimensional Poverty Index (MPI): 2018 revision. *World Development, 103*, 93–115. https://doi.org/10.1016/j.worlddev.2017.10.026
- Sen, A. (2017). *Collective choice and social welfare* (Expanded ed.). Harvard University Press.
- Government of India. (2022). *National Multidimensional Poverty Index: A progress review*. NITI Aayog.
- World Bank. (2022). *Poverty and shared prosperity 2022: Correcting course*. World Bank Publications.

UNIT- II

- Ellis, F., & Freeman, H. A. (2016). *Rural livelihoods and poverty reduction policies*. Routledge.

- Rao, N., & Raju, S. (2020). Gendered livelihoods and household well-being in India. *World Development, 127*, 104739. https://doi.org/10.1016/j.worlddev.2019.104739
- Government of India. (2021). *Situation assessment of agricultural households and land and livestock holdings of households in rural India*. National Statistical Office.

UNIT- III

- Mehrotra, S., & Parida, J. K. (2019). India's employment crisis: Rising education levels and falling non-farm employment. *Development and Change, 50*(4), 1157–1184. https://doi.org/10.1111/dech.12515
- Papola, T. S., & Sahu, P. P. (2020). *Labour markets in India: Issues and perspectives*. Springer India.
- International Labour Organization. (2020). *India employment report: Youth employment and skill development*. ILO.

UNIT -IV

- Government of India. (2023). *Skill India digital ecosystem and AI integration framework*. Ministry of Skill Development and Entrepreneurship.
- Kumar, R., & Chattopadhyay, S. (2017). Financial inclusion, SHGs, and women's livelihoods in India. *Journal of Rural Development, 36*(2), 179–198.

Suggested Readings

- Jha, S. (2018). *Informal Sector and Urban Livelihoods in India*. Routledge.
- ILO. (2016). *Skills for Employment Policy Briefs.* Geneva: International Labour Organization.
- NITI Aayog. (2018). *Skill India: Policies, Progress and Case Studies*. Government of India.
- Banerjee, A. & Duflo, E. (2011). *Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty.* Public Affairs.
- Krishnaswamy, K. & Shekhar, R. (2019). *Labour Markets in India: Issues and Perspectives*. Oxford University Press.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
CIVIL SOCIETY AND VOLUNTEER MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Civil Society and Volunteer Management	**4**	**3**	**1**	**0**	**As per admission requirements**	**Nil**

Learning Objectives

1. To understand the evolution, concepts, and structures of civil society and its interactions with the state and market.
2. To analyse the role of CSOs in development, democracy, accountability, and governance.
3. To examine the principles, motivations, and management strategies of volunteerism across different contexts.
4. To explore methods for strengthening CSOs through capacity building, partnerships, innovation, and effective monitoring and evaluation.

Learning Outcomes

The students would be able to:

1. Explain key concepts of civil society and assess the functions and relationships of CSOs in contemporary society.
2. Critically evaluate how CSOs contribute to development, governance, advocacy, and social accountability.
3. Apply volunteer management principles to design and support effective volunteer engagement within CSOs.
4. Assess CSO performance using monitoring and evaluation frameworks and identify strategies to enhance organizational impact and sustainability.

THEORY
(Credits 3; Hours 45)

UNIT I: Civil Society – Meaning, Origins and Interpretation **10 Hours**

This unit introduces the foundations of civil society, tracing its historical evolution, conceptual interpretations, and structural forms. It examines how civil society organizations (CSOs) function, the nature of their engagement with the state and market, and the role of Corporate Social Responsibility (CSR) in development partnerships.

- Meaning, concept, and evolution of civil society; historical & contemporary perspectives
- Types, structure, and functioning of CSOs
- Corporate Social Responsibility: concept, importance, dimensions, and development partnerships
- Relationships and partnerships between CSOs, government, and other stakeholders

UNIT II: Civil Society, Development, and Democracy **12 Hours**

This unit explores the relationship between civil society and democratic governance. It covers ideological, socio-economic, and legal dimensions, along with the role of CSOs in people's movements, transparency, and accountability. It also assesses how globalization reshapes civil society structures and functions.

- Ideological, social, economic, and legal perspectives of civil society
- CSOs, people's movements, and the state
- Governance challenges in CSOs: accountability, transparency, and ethics
- Civil society's contributions to democracy and good governance
- Globalization and its impact on civil society

UNIT III: Volunteerism and Volunteer Management **12 Hours**

This unit focuses on the concept, context, and practice of volunteerism. It unpacks types of volunteers, motivational drivers, and ethical considerations. Students learn the principles and strategies of volunteer management, planning volunteer roles, and aligning them with CSO needs.

- Concept, meaning, and context of volunteerism
- Types of volunteers: youth, community, corporate, digital/virtual
- Motivation, benefits, ethics, and determinants of volunteer engagement
- Volunteer management models, strategies, and organizational planning
- Volunteering as social exchange; volunteering on boards
- Resource mobilization and fundraising involving volunteers

UNIT IV: Strengthening Civil Society and Future Trends **11 Hours**

This unit addresses strategies for enhancing CSO effectiveness through capacity building, advocacy, partnerships, and innovation. It also covers monitoring and evaluation practices, technology-enabled interventions, and emerging trends in civil society and volunteerism.

- Capacity building: leadership, governance, and institutional development
- Advocacy, communication, and networking strategies
- Monitoring, evaluation, and impact assessment of CSO initiatives
- Innovation in civil society: social entrepreneurship and digital platforms
- Future trends: digital civil society, hybrid/gig volunteering, sustainability and regulatory challenges

TUTORIAL
(Credits1;Hours 15)

- Map and profile a CSO based on its mission, structure, and stakeholders.
- Review a CSR project to understand partnerships and development strategies.
- Analyse a case study of an Indian people's movement and its civil society role.
- Prepare a transparency and accountability assessment checklist for a CSO.
- Conduct a short volunteer motivation survey among youth or community members.
- Design a volunteer management plan including recruitment, orientation, and retention.
- Create a brief fundraising or resource-mobilization activity involving volunteers.
- Prepare an advocacy or digital communication campaign on a selected social issue.

Essential Readings:

UNIT- I

- Tandon, R., & Mohanty, R. (2016). *Civil society and governance in India*. SAGE Publications India.
- Kumar, A. (2017). Civil society in India: Evolution, role, and challenges. *Indian Journal of Public Administration, 63*(2), 223–238.
- Government of India. (2021). *National voluntary guidelines on social, environmental and economic responsibilities of business*. Ministry of Corporate Affairs.

UNIT- II

- Tandon, R. (2016). *Democracy, civil society, and governance*. Routledge India.
- Jayal, N. G. (2017). *Citizenship and its discontents: An Indian history*. Harvard University Press.
- Kabeer, N., & Sanyal, P. (2018). NGOs, civil society, and development accountability. *World Development, 105*, 1–14. https://doi.org/10.1016/j.worlddev.2017.12.007

UNIT- III

- Piatak, J. S., & Sowa, J. E. (2024). *Volunteer management: A strategic approach*. Routledge.
- Bano, M. (2018). Volunteering and social action in India: Trends and motivations. *Nonprofit Policy Forum, 9*(3), 1–18. https://doi.org/10.1515/npf-2017-0040
- United Nations Volunteers. (2018). *State of the world's volunteerism report: The thread that binds*. UNV.

UNIT- IV

- Anheier, H. K., Krlev, G., & Preuss, S. (2017). Social innovation as impact-driven change. *Stanford Social Innovation Review, 15*(2), 42–47.
- Tandon, R., & Brown, L. D. (2018). *Civil society organizations and the state: Governance, accountability and innovation*. Routledge.
- World Economic Forum. (2023). *Digital transformation of civil society*. WEF.

Suggested Readings:

- Anheier, H. K., & Toepler, S. (2023). *Nonprofit organizations: Theory, management, policy* (4th ed.). Routledge.
- Brudney, J. L. (2016). Designing and managing volunteer programs. In D. O. Renz (Ed.), *The Jossey-Bass handbook of nonprofit leadership and management* (pp. xx–xx). John Wiley & Sons. (*Add page numbers if known.*)

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

COMMUNITY ORGANIZATION; SOCIAL POLICY AND DEVELOPMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Community Organization; Social Policy and Development	**4**	**3**	**1**	**0**	**As per admission requirements**	

Learning Objectives

1. To understand the organization and structure of different types of communities and the dynamics of social change.
2. To study the theoretical and practical inquiry in the field of Social Policy and Planned interventions.
3. To critically analyze contemporary social policies in developed and developing countries.

Learning Outcomes

The students would be able to:

1. Understand the key concepts and perspectives related to community, social structure and social systems
2. Familiarize with the elements and theories of community relationship development, community organization and their mobilization for development goals
3. Gain insight into the development of social policies and planned interventions and their impact on the social and administrative organization of developed and developing countries.
4. Recognise the diversity of human needs and societal responses to social injustice and disadvantage

THEORY

(Credits 3; Hours 45)

UNIT I: Concept of community, community structures and Community Organization 12 Hours

- Concept of Community : Traditional and modern, Characteristics of Community Sociological thoughts on community- Marx, Durkheim, Gandhi, Tagore and others
- Types of communities- Tribal, Rural and Urban and changing norms and customs
- Concept of Community Organization, Need, Importance
- Principles and new ways of community organization, Indian and International
- Relationship of community organization and community development, Approaches and goals of community development-Welfare to rights based approaches
- Theoretical orientation of communities- Functionalism, Structuralism, Social Action theory, Conflict theory
- Types of Community organizations : Collectives, Cooperatives, Civil society groups, Community

Based Organsations (CBOs) and their roles in mobilizing people and influencing outcomes – (select case studies)
- Care and welfare systems in communities: mechanisms and institutions

UNIT II: People's Participation & Dynamics of Change in Community 13 Hours

- Scope, and Levels of people's participation for change
- Stakeholder's participation analysis in development programmes and initiatives- select case studies
- People's movements : Issues, processes and outcomes in relation to Gender, Environment, Employment, Governance, Sustainable consumption and others.
- Role of Mass Media and ICTs in community based change.

UNIT III: Development & Indian Economic Environment 10 Hours

- Meaning and concept of growth, development and sustainable development, Challenges of sustainable development -local, national and global linkages
- Indicators of development, Characteristics of less developed countries and SDGs
- Poverty & issues of inequality, inequity and vulnerability ; illiteracy and Unemployment ; Urbanisation and Migration
- Population Demographics & Transition
- Urban and rural Livelihood issues-Indian agriculture- status, prospects and challenges; Agricultural policy;
- New Economic Policy, Industrialisation, Liberalization and Globalisation
- International protocols and agreements and their impact on Indian population
- Panchayti Raj Institutions and Democratic Governance

UNIT IV: Social Policy & Planning: Approaches and Perspectives 10 Hours

- History and trajectory of social policy and social planning in selected developed and developing countries,
- Social policy in India - Health care, Education, Housing, Employment and Welfare and Social security.
- Social policy and planning- Issues of capacity, accountability, transparency and their relationship to beneficiary publics and the state.
- Community participation in social policy and policy changes

TUTORIAL
(Credits 1; Hours 15)

- Orientation to community and community organizations
- Rapport Formation, Skills and methods of community contact
- Theoretical Foundation : Working in the community (Groups, Social Structure, Community Dynamics)
- Participatory Techniques and People's participation
- Using PLA in community (Time based, space based and relation based methods)
- Analysis of Community Issues
- Need Assessment
- Key dimensions of issue in community, community groups and other stakeholders involved.
- Developing a plan for addressing community issues

- Critical analysis of social policy and programme and it's implementation and impact at the grassroot level.

Essential Readings:

UNIT- I

- Manohar, S., & Rao, M. S. A. (2016). *Indian society: Themes and perspectives*. New Delhi, India: Oxford University Press.
- Midgley, J. (2017). *Social development: Theory and practice*. Thousand Oaks, CA: Sage Publications.
- Singh, K. (2016). *Community development: Principles and practices*. New Delhi, India: Sage Publications.

UNIT- II

- Arnstein, S. R. (2019). A ladder of citizen participation revisited. *Journal of the American Planning*
- Cornwall, A. (2016). *Participation in development: Theory and practice*. New York, NY: Routledge.
- Manyozo, L. (2017). *Media, communication and development: Three approaches*. New Delhi, India: Sage Publications.
- Shah, G. (2018). *Social movements in India: A review of literature*. New Delhi, India: Sage Publications.

UNIT- III

- Government of India. (2019). *NITI Aayog: Strategy for New India @75*. New Delhi, India: Government of India.
- Kabeer, N. (2016). *Gender, labour markets and inclusive growth*. New Delhi, India: Sage Publications.

UNIT- IV

- Deacon, B. (2017). *Global social policy and governance*. London, UK: Sage Publications.
- Hall, A., Midgley, J., & Wright, S. (2019). *Social policy for development*. Thousand Oaks, CA: Sage Publications.
- Midgley, J., & Conley, A. (2017). *Social work and social development: Theories and skills for developmental social work*. New York, NY: Oxford University Press.

Suggested Readings:

- Sonar, G. (2016). *Social Policy, Planning and Development: An Indian Experience*. Germany: LAP LAMBERT Academic Publishing.

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

DESCIPLINE SPECIFIC CORE
CLIMATE CHANGE, GREEN TECHNOLOGIES AND ENVIRONMENT ACTION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Climate Change, Green Technologies And Environment Action	4	3	-	1	As per admission requirements	

Learning Objectives

- To understand the fundamentals of climate change
- To analyze the impacts of climate change and extremes on different sectors and identify strategies for climate change mitigation, adaptation.
- To examine national and international climate policies for combating climate change

Learning Outcomes

The students would be able to:

- Understand of strategies to mitigate and adapt to climate change at multiple scales
- Analyze climate change challenges and identify practical and sustainable solutions to enhance climatic resilience.
- Identify and evaluate green technologies for sustainable production

THEORY
(Credits 3; Hours 45)

UNIT I: Introduction to Climate Change **8 Hours**

This unit presents an overview of the concept, importance, and origins of climate change. It examines the evidence of climate change, investigates climate modeling and forecasts utilizing and addresses approaches for mitigation and adaptation.

- Climate change: Concept, significance and causes
- Natural vs. anthropogenic climate change
- Evidence of climate change: temperature records, extreme weather events (Floods, droughts, Sea Rise, heatwaves etc)
- Climate modeling and projections: CMIP & RCP (Representative Concentration Pathways)
- Climate change mitigation and adaptation

- Interlinkages between climate change and SDGs.

Unit II: Impacts of Climate Change 10 Hours

This unit explores the extensive effects of climate change on different sectors Additionally, it focuses on the gendered and social aspects of climate change, focusing on vulnerability and resilience.

- Impact on Atmospheric and Climate System: Rising temperatures, altered rainfall, and increased intensity and frequency of extreme events.
- Impact of water resources: Water scarcity, depleting quality of water
- Impact on Agriculture and Food Security: Reduced agricultural productivity, and food security.
- Impacts on Human Health risks, economic losses, and increased migration and social stress. Impact on Urban System: heat islands, infrastructure damage, and flooding.
- Gendered impacts of climate change: Disproportionate effects on health, livelihoods, safety, and access to resources, particularly for women and marginalized groups.

Unit III: National and International initiatives to combat climate change 13 Hours

This unit explores both global and national initiatives aimed at combating climate change, Additionally, it discusses national strategies including India's National Action Plan on Climate Change (NAPCC) and its associated missions, state-level action plans, and programs designed to promote conservation and clean technology.

International Initiatives:

- United Nations Framework Convention on Climate Change (UNFCCC)
- Kyoto Protocol and Clean Development Mechanism (CDM)
- Paris Agreement and Nationally Determined Contributions (NDCs)
- Intergovernmental Panel on Climate Change (IPCC)
- Global Climate Funds: Green Climate Fund (GCF), Adaptation Fund
- National Action Plan on Climate Change (NAPCC) and its eight missions: National Solar Mission, (National Mission for Enhanced Energy Efficiency, National Mission on Sustainable Habitat, National Water Mission, National Mission for Sustaining the Himalayan Ecosystem, National Mission for a Green India, National Mission for Sustainable Agriculture and National Mission on Strategic Knowledge for Climate Change)
- State Action Plans on Climate Change (SAPCCs)
- Renewable energy policies and promotion of clean technologies
- National Electric Mobility Mission, energy conservation standards
- Climate-resilient agriculture and water management programs
- Policies for afforestation, biodiversity conservation, and carbon markets

UNIT IV: Climate Change and Green Technology 14 Hours

This introduces the concept and principles of green technology and its role in low-carbon development. It covers renewable energy systems, energy-efficient designs, sustainable agriculture, water conservation, waste management, and pollution reduction technologies.

- Concept, scope, and principles of green technology and low-carbon development.
- Renewable energy technologies: solar, wind, biomass, and small-scale hydropower.
- Energy-efficient technologies: LED systems, improved cookstoves, smart grids, and green buildings.

- Sustainable agriculture technologies: drip irrigation, precision farming, vertical farming, and organic inputs.
- Water conservation technologies: rainwater harvesting, greywater recycling, and micro-irrigation systems.
- Waste management technologies: composting, biogas plants, waste-to-energy systems, and recycling innovations.
- Pollution reduction technologies: air and water purification systems, clean production methods.
- Emerging green innovations: electric mobility, circular economy solutions, and climate-smart digital tools. Climate-smart agriculture technologies, Green finance & carbon markets and Innovations in sustainable materials

PRACTICAL
(Credits 1; Hours 30)

- Measure individual or household carbon footprints using online calculators.
- To visit a community and identify coping strategies of vulnerable section of society to climatic stresses
- Identify major emission sources and suggest practical mitigation strategies. Compare footprints before and after implementing low-carbon practices .
- Review of Climate change and sustainable development related data sources: Indices: Living planet index (LPI), Happy Planet Index (HPI). Sustainable Development Goal Index (SDGI)

Essential Readings

UNIT- I

- Intergovernmental Panel on Climate Change. (2021). *Climate change 2021: The physical science basis*. Cambridge University Press. https://doi.org/10.1017/9781009157896
- Mukherjee, S., & Chakraborty, I. (2021). *Climate change and sustainable resource management*. Springer.

UNIT- II

- Intergovernmental Panel on Climate Change. (2022). *Climate change 2022: Impacts, adaptation and vulnerability*. Cambridge University Press. https://doi.org/10.1017/9781009325844
- Rao, N., Lawson, E. T., Raditloaneng, W. N., Solomon, D., & Angula, M. N. (2019). Gendered vulnerabilities to climate change. *World Development, 122*, 85–97. https://doi.org/10.1016/j.worlddev.2019.05.006

UNIT- III

- United Nations Framework Convention on Climate Change. (2015). *Paris Agreement*. UNFCCC.
- Government of India. (2021). *India's long-term low emissions development strategy*. Ministry of Environment, Forest and Climate Change.

- Government of India. (2022). *National Action Plan on Climate Change (Updated framework)*. MoEFCC.

UNIT- IV

- Ahuja, D. (2021). *Green technologies for sustainable development*. SAGE Publications India.
- Kumar, A., & Sharma, M. P. (2017). Biomass energy technologies in India. *Renewable and Sustainable Energy Reviews, 70*, 24–39. https://doi.org/10.1016/j.rser.2016.11.073
- Mukherjee, S., & Chakraborty, I. (2022). Green finance and carbon markets in emerging economies. *Journal of Sustainable Finance & Investment, 12*(3), 741–758. https://doi.org/10.1080/20430795.2021.1880214

Recommended Readings

- Richardson, K., Steffen, W., & Liverman, D. (2020). *Climate change: Global risks, challenges, and decisions*. Cambridge University Press.
- Kaushik, C. P., & Kaushik, A. (2019). *Perspectives in environmental studies* (6th ed.). New Age International Publishers.
- Kumar, P. (Ed.). (2022). *Climate change and environmental sustainability*. Springer.
- Singh, R. B., & Hietala, R. (Eds.). (2021). *Climate change and sustainable development: India and global perspectives*. Springer.

- Swarup, D., & Roy, D. (2019). *Environment and climate change: Emerging issues and policy options*. Oxford University Press.
- United Nations Environment Programme (UNEP). (2021). *Green technology innovations for sustainable development*. UNEP Publications.

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

DISCIPLINE SPECIFIC CORE

COMMUNICATION FOR NUTRITION, HEALTH & WELL-BEING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Communication For Nutrition, Health & Well-Being	**4**	**2**	**0**	**2**	**As per admission requirements**	**Should be aware of basic concepts related to health & nutrition and communication fundamentals**

Learning Objectives

1. To develop an understanding of correlations between Nutrition, Health & Well-being
2. To comprehend the multi-dimensional nature of nutrition, health and well-being
3. To effectively understand communication fundamentals for communicating about Nutrition, Health & Well-being in diverse contexts

Learning Outcomes

The students would be able to:

1. Develop an understanding of correlations between Nutrition, Health & Well-being
2. Comprehend the multi-dimensional nature of nutrition, health and well-being
3. Understand communication fundamentals for communicating about Nutrition, Health & Well-being in diverse contexts
4. Develop IEC and other communication tools for Nutrition, Health & Well-being

THEORY
(Credits 2, Hours 30)

UNIT I: Nutrition & Development **8 Hours**

This unit underpins on the correlation between nutrition, health and development.

- Relationship between Nutrition, Health and Well-being
- Concepts of Community and Public Nutrition, Importance and Challenges for interventions
- Assessment of Nutritional Status – focus on Children, Adolescents and Women
- Public Health Aspects of Malnutrition- Life cycle approach to understand the nutritional requirements and causes and consequences of Micro and Macro nutrient deficiencies
- Public Health Aspects of Lifestyle Related Disorders (Obesity, Hypertension, Coronary heart disease, Diabetes, Cancer, HIV/ AIDS)- Awareness building to service delivery
- Nutrition support programmes and initiatives, POSHAN Abhiyan, ICDS, National Nutrition Mission and Role of Community led and Communication based efforts
- Behaviour change initiatives for improving nutrition indicators –selected case studies

UNIT II: Health & Development **12 Hours**

This unit describes the multi-dimensional nature of health and its contextual underpinnings

- Intrinsic linkage between health and development.
- Public and Global health, Epidemiology, Preventive and promotive health.
- Concept of Community and Public health and Challenges of access and quality of health services
- Social Determinants of health
- Health care issues across life cycle- children, adolescents, men, women and the elderly
- Reproductive and Mother and Child health: Challenges and efforts made for improving Reproductive and Mother and Child health - Global, National, State and Local (selected case – studies), Government Reproductive and Child Health Programmes - Hierarchy of Indian Public Health System for RCH
- Review of NHM, JSY, JSSK and appraisal of interpersonal communication in health, role of triple A (ASHA, ANM and AWW)
- Communitization of health- Role of VHSNCs, VHSNDs in influencing health services delivery and health outcomes
- Health Economics- Health Budgeting & Expenditure on public health
- Health Insurance & OOPE
- Environment and health- Pollution, toxicity, quality, contaminations, residues and adulteration issues –prevalence, health implications.
- Health issues during disaster and emergencies and special circumstances- Relief and rehabilitation strategies.

UNIT III: Well-being & Development **4 Hours**

This unit explores the continuum of wellness and its interrelationship with nutrition, health and development

- Concepts & determinants of Well-Being: Physical, mental, social, emotional, and spiritual well-being; WHO and SDG perspectives.
- Theoretical Foundations: Positive psychology, PERMA model, salutogenesis, and socio-ecological approaches, Social Cognitive Theory to promote healthy lifestyles and resilience.
- Mental Health & Emotional Well-Being: Stigma reduction, stress management, youth and workplace well-being communication.
- Community Well-Being Approaches: Participatory communication, social support systems, and culturally rooted well-being practices.
- Yoga, Ayurveda, Psychotherapy and mHealth Tools

UNIT IV: Communication for Nutrition, Health & Well-being **6 Hours**

This unit explores the areas and potential of SBC applications.

- Health communication: Indian and Global Perspectives, Challenges of health Communication
- Health Communication and BCC- Meaning, concept, various strategies, types.
- Strategizing health advocacy and SBCC campaigns- elements, tools and techniques
- Role of media in promoting health
- Social marketing, participatory training and campaigns of health communication.
- Innovative Approaches in Health, Nutrition & Well-being Communication: Entertainment Education
- Incentives for Health Communication and Positive Deviance Approach

PRACTICAL

(Credits 2; Hours 60)

- Analysis of data sources related to Nutrition, Health & Well-being
- Critical Analysis of SBC Nutrition, Health & Well-being Campaigns
- Visit to PHC/Government Facility and interaction with Health Workers
- Design of campaign on health/nutrition/well-being
- IEC material design & Evaluation
- Diet & Well-Being Assessment Activity
- Myth-Busting & Misinformation Audit
- Reviewing or designing simple mHealth tools
- Reflection & Behaviour-Tracking Journal
- Podcast or Short Audio Capsule
- Most Significant Change Technique

Essential Readings:

UNIT- I

- National Institute of Nutrition. (2020). *Dietary guidelines for Indians* (2nd ed.). Indian Council of Medical Research.
- Ruel, M. T., Alderman, H., & Maternal and Child Nutrition Study Group. (2017). Nutrition-sensitive interventions and programmes. *The Lancet, 382*(9891), 536–551. https://doi.org/10.1016/S0140-6736(13)60843-0
- Government of India. (2018). *POSHAN Abhiyaan: National Nutrition Mission operational guidelines*. Ministry of Women and Child Development.

UNIT- II

- World Health Organization. (2016). *Health in all policies (HiAP) framework for country action*. WHO.
- Baru, R., Acharya, A., Acharya, S., Kumar, A. S., & Nagaraj, K. (2019). Inequities in access to health services in India. *Economic and Political Weekly, 54*(12), 38–45.
- Government of India. (2021). *National Health Policy and National Health Mission: Progress and challenges*. Ministry of Health and Family Welfare.

UNIT- III

- World Health Organization. (2018). *Well-being measures in primary health care*. WHO Regional Office for Europe.
- Diener, E., Oishi, S., & Tay, L. (2018). Advances in subjective well-being research. *Nature Human Behaviour, 2*, 253–260. https://doi.org/10.1038/s41562-018-0307-6
- Chandramouli, C., & Murthy, P. (2019). Mental health and well-being in India. *Indian Journal of Psychiatry, 61*(Suppl 4), S741–S747. https://doi.org/10.4103/psychiatry.IndianJPsychiatry_516_18

UNIT- IV

- Singhal, A., & Rogers, E. M. (2017). *Entertainment-education: A communication strategy for social*

- Govt. of India. (2020). *Behaviour change communication strategy under POSHAN Abhiyaan*. Ministry of Women and Child Development.
- Nair, N., Tripathy, P., Sachdev, H. S., Pradhan, H., & Costello, A. (2016). Participatory women's groups and health communication in India. *The Lancet Global Health, 4*(2), e119–e127. https://doi.org/10.1016/S2214-109X(15)00274-9

Suggested Readings:

- Jatana, A. (2023). My food, my health. Penguin Random House India.
- Penguin Random House India

- Vir, S. C. (Ed.). (2023). Child, adolescent and women nutrition in India: Public policies, programmes and progress. Routledge India.

- Yadav, P., & Gautam, M. (Eds.). (2025). Public health nutrition: Challenges and opportunities in the 21st century. Iterative International Publishers.
- IIP Books

- Narula, U. (2019). Healthcare communication in India. Har-Anand Publications.
- Bookswagon

- Pradhan, J. (Ed.). (2025). Nutrition and food security in India: Enriching the cycle of research, public policy and practice. Springer Nature

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

DISCIPLINE SPECIFIC ELECTIVE

RURAL MARKETING AND DEVELOPMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Rural Marketing & Development	4	3	1	0	As per admission requirements	Should be aware of nature of rural communities and basics of marketing

Learning Objectives

- To understand the structure, behavior, and dynamics of rural markets within the broader context of rural development in India.
- To appreciate the marketing mix strategies, research tools, and communication approaches suitable for rural consumers and distribution environments.
- To analyze rural development programmes, innovations, and market linkages to evaluate their contribution to inclusive growth and sustainable livelihoods.

Learning Outcomes

The students will be able to:

- Critically assess rural consumer behavior and market characteristics using socio-economic and cultural frameworks.
- Design and evaluate marketing strategies and communication plans tailored to rural market needs and media environments.
- Examine and interpret rural development initiatives, value chains, and institutional mechanisms that influence rural markets.
- Propose innovative, sustainable, and technology-driven solutions to strengthen rural market systems and enhance rural livelihoods.

THEORY

(Credits 3; Hours 45)

Unit I: Understanding Rural Markets **12 Hours**

This unit introduces the concept, structure, and characteristics of rural markets in India. It explores rural consumers, demand patterns, and socio-cultural factors influencing purchase behavior.

- Rural Marketing Environment: Evolution, Nature and scope
- Structure of rural economy and market linkages

- Rural Consumer Behavior: Demographic and socio-economic profiles of rural consumers, income sources and expenditure patterns, demand patterns and consumption behavior, Household decision-making and cultural influences
- Segmenting, Targeting & Positioning in Rural Markets
- Rural market trends: digitalization, migration, remittances, Rural supply chains and distribution challenges
- Role of local markets (haats, melas) in rural commerce

Unit II: Rural Markets: The Marketing Mix 12 Hours

This unit focuses on 4Ps of the marketing mix in the context of the rural markets. It also throws light on rural marketing research process, tools and ethics.

- Product: Concept, classification, decisions
- Pricing: Pricing Basics and Strategies for rural markets
- Place: Rural distribution systems and last-mile delivery models, Channel Dynamics and behavior
- Promotion: Role of digital, social, and mobile technologies in rural marketing
- Rural media landscape: radio, folk media, community platforms
- Social marketing and behavior change communication in rural areas
- Rural Marketing Research: Process, Tools & Ethics
- Corporate initiatives and CSR in rural markets
- Case studies on rural marketing (HUL, ITC e-Choupal, Tata, Amul)

Unit III: Rural Development and Market Linkages 11Hours

This unit examines how rural development policies, institutions, and livelihood programmes shape rural markets, enabling income generation and economic participation.

- Rural development: concepts, objectives, and approaches
- Government schemes and institutions (NRLM, PMAY, MGNREGS, SHGs)
- Role of Panchayati Raj Institutions (PRIs) in local markets
- Agricultural development and its impact on rural markets
- Non-farm sector and rural enterprises
- Market linkages for farmers and producer groups
- Cooperatives, Farmer Producer Organisation**s**, and rural entrepreneurship
- Role of microfinance, credit institutions, and rural banks
- Value chain development in agriculture and rural products
- Case studies of successful rural development interventions

Unit IV: Innovations, Sustainable Development & Future of Rural Markets 10 Hours

This unit explores emerging innovations, sustainability pathways, and the future landscape of rural markets, emphasizing resilience and inclusive growth.

- Innovations in rural marketing (fintech, agritech, digital marketplaces)
- Sustainable rural development and green marketing
- Climate change impacts on rural markets and livelihoods
- E-commerce penetration and digital rural platforms
- Social enterprises and inclusive business models
- Public–private partnerships in rural development
- Rural tourism, crafts, and cultural industries
- Entrepreneurship development and start-up ecosystems
- Monitoring and evaluating rural market interventions
- Future trends: AI, smart villages, rural data systems

TUTORIAL
(Credits 1; Hours 15)

- Market Survey & Consumer Profiling
- Designing a Rural Communication Campaign
- Product Adaptation for Rural Markets
- Mapping a Rural Distribution Channel
- Rapid Market Assessment (Desk or Field-Based)
- Analysis of Government Programs Impacting Rural Markets
- Field Visit / Virtual Exposure Module
- Analysis of a Rural Marketing Case Study

Essential Readings

UNIT- I

- Kashyap, P., & Raut, S. (2022). *The rural marketing: Text and cases* (3rd ed.). SAGE Publications India.
- Government of India. (2021). *Situation assessment of agricultural households and rural consumption expenditure*. National Statistical Office, Ministry of Statistics and Programme Implementation.

UNIT- II

- Kashyap, P. (2019). Rural marketing strategies: Product, pricing, promotion and distribution challenges. *Journal of Business Research, 99*, 459–466. https://doi.org/10.1016/j.jbusres.2017.07.005
- Kotler, P., Kartajaya, H., & Setiawan, I. (2021). *Marketing 5.0: Technology for humanity*. Wiley.
- Government of India. (2020). *CSR and corporate engagement in rural development*. Ministry of Corporate Affairs.

UNIT- III

- Singh, S., & Singh, T. (2020). Farmer Producer Organizations in India: Linking farmers to markets. *Agricultural Economics Research Review, 33*(1), 1–14.

- Reddy, A. A., & Dev, S. M. (2019). Rural non-farm sector and employment diversification in India. *Indian Journal of Labour Economics, 62*(3), 437–456.
- Government of India. (2022). *National Rural Livelihoods Mission: Annual report*. Ministry of Rural Development.

UNIT- IV

- Prahalad, C. K. (2020). *The fortune at the bottom of the pyramid: Eradicating poverty through profits* (5th ed.). Pearson.
- Agarwal, A., & Brem, A. (2020). Strategic business transformation through technology in rural markets. *Technological Forecasting and Social Change, 155*, 119968. https://doi.org/10.1016/j.techfore.2020.119968
- Bairagi, S., & Fenton, J. (2021). Digital platforms and rural market transformation in India. *Information Technology for Development, 27*(3), 474–492.

Suggested Readings

- Krishnamacharyulu, C. S. G., & Ramakrishnan, L. (2019). *Rural marketing: Text and cases* (3rd ed.). Pearson.
- Venkatesh, P., & Suresh, P. (2021). *Rural economics*. Sage Publications India.
- Singh, G., & Pandey, A. (2022). *Rural development: Principles, policies, and management* (4th ed.). Sage Publications India.
- Neuwirth, R. (2017). *Stealth of nations: The global rise of the informal economy*. Anchor Books.
- Ray, G. L., & Mondol, S. (2022). *Research methods in extension education and social sciences* (2nd ed.). Kalyani Publishers.
- World Bank. (2020). *World development report 2020: Trading for development in the age of global value chains*. World Bank Publications

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

DISCIPLINE SPECIFIC ELECTIVE
PUBLIC ADMINISTRATION AND GOVERNANCE

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Public Administration and Governance	**4**	**3**	**1**	**0**	**As per admission requirements**	**Complete Undergraduate course**

Learning Objectives:

1. To understand the evolution, structure, and values of the Indian Public Administration system.
2. To analyse the ecosystem of governance, public policy, and accountability mechanisms in India.
3. To examine the integral role of communication in development administration and governance.
4. To develop skills for designing and evaluating effective communication strategies for public schemes and governance initiatives.

Learning Outcomes:

The student would be able to:

1. Explain the structure, evolution, and core principles of public administration in India.
2. Critically assess the roles of key institutions and accountability frameworks in Indian governance.
3. Analyse the interplay between communication, public policy, and development outcomes in the Indian context.
4. Apply practical tools for policy analysis, communication strategy design, and program evaluation relevant to the public sector.

THEORY
(Credits 3; Hours 45)

UNIT I: Indian Public Administration: Evolution, Structure, and Values 10 Hours

This unit introduces the foundations of the Indian administrative system, tracing its historical evolution and constitutional framework. It examines the structure of services and the core values of public service in India.

- Meaning, nature, scope, and significance of Public Administration
- Evolution of Public Administration in India
- The Constitutional Framework: Union, State, and Concurrent Responsibilities
- The Steel Frame: Structure and Role of All India Services (IAS, IPS, IFS) and other Central Services
- Foundational Values: Constitutional values, Ethical and Moral values, Professional values
- Sardar Patel's Vision, Code of Conduct, and Probity in Public Life

UNIT II: The Indian Governance Ecosystem: Institutions, Policy, and Accountability15 Hours

This unit explores the framework of governance in India, covering key institutions, the public policy process, decentralized governance, and mechanisms ensuring transparency and accountability.

- Conceptualizing Governance in India: Understanding Governance Structure in India, From Government to Participatory Governance
- Understanding the NITI Aayog in designing public policy in India.
- Stakeholders involved in the Public Policy Process in India.
- Key Institutions of Governance: Executive (PMO, Cabinet Secretariat), Legislature, and Constitutional Bodies (ECI, CAG, UPSC)
- Decentralized Governance: 73rd & 74th Amendments, Panchayati Raj Institutions, and Urban Local Bodies
- Accountability Mechanisms: The RTI Act 2005, CVC, Lokpal & Lokayuktas, Social Audit

UNIT III: Development Administration & Communication in India 10 Hours

This unit integrates communication into India's development framework, analysing flagship schemes, digital governance, and the role of media and behaviour change communication in public policy.

- The Philosophy and Practice of Development Administration in India
- Flagship Development Schemes as Case Studies (e.g., MGNREGA, NHM, SBM, PMJDY)
- Digital India and E-Governance: Aadhaar, UPI, and the JAM Trinity
- The Role of Media in Indian Governance
- Behaviour Change Communication (BCC) in Indian Public Policy.
-

UNIT IV: Applied Governance Communication: Indian Strategies and Campaigns 10 Hours

This unit focuses on the practical application of communication strategies in the Indian context, including campaign deconstruction, social marketing, grievance redressal, and monitoring & evaluation.

- Designing Communication Strategies for Indian Public Schemes
- Deconstructing Iconic Indian Government Campaigns.
- Social Marketing for Public Good in India
- Crafting Documents for Indian Governance: Policy Briefs and Public Notices
- Public Grievance Redressal in India: CPGRAMS, Role of Social Media
- Monitoring & Evaluating Governance Communication

TUTORIAL
(Credit 1; Hours 15)

- Profile a specific Indian Government Ministry/Department, analysing its structure and key schemes.
- Prepare a Policy Brief on a live State/Central Scheme for a District Magistrate.
- Conduct a Communication Audit of a recent public campaign
- File an RTI application to a local authority and analyse the response and process.
- Develop a Stakeholder Mapping and Communication Plan for a local civic issue.
- Simulate a Social Audit for a local MGNREGA project using official portal data.
- Design a grassroots-level IEC (Information, Education, and Communication) campaign for a public health issue.

Essential Readings:

UNIT- I

- Arora, R. K., & Goyal, R. (2018). *Indian public administration: Institutions and issues* (2nd ed.). New Age International Publishers.
- Government of India. (2020). *Code of conduct for civil servants*. Department of Personnel and Training (DoPT).

UNIT- II

- Chakrabarty, B., & Bhattacharya, M. (2020). *The governance discourse in India*. Oxford University Press.
- Agarwal, O. P., & Somanathan, T. V. (2020). *Public policy making in India: Issues and remedies*. Routledge India.
- Bhattacharyya, D. (2019). *Decentralisation and local governance in India*. Oxford University Press.

UNIT- III

- Singh, H. (2019). *Public administration in India: An emerging perspective*. Routledge India.
- Kulkarni, S., & Mahadevia, D. (2016). Development administration and governance reforms in India. *Indian Journal of Public Administration, 62*(3), 456–472.
- Sood, S., Sengupta, M., Mishra, P. R., & Jacoby, C. (2018). Behaviour change communication in Indian public health programmes. *Journal of Health Communication, 23*(7), 626–636.

UNIT- IV

- Nair, S. (2019). *Strategic communication for public governance in India*. SAGE Publications India.
- Kotler, P., & Lee, N. (2016). *Social marketing: Changing behaviors for good* (5th ed.). SAGE.

Suggested Readings:

- Dubey, S. (2020). *Development Communication and Public Policy*. Sage Publications.
- *NITI Aayog Strategy Documents and Three-Year Action Agenda*. NITI Aayog, Government of India.
- *Economic Survey of India* (Latest Edition). Ministry of Finance, Government of India.

- *Yojana and Kurukshetra Magazines* (Relevant Issues on Governance and Development). Publications Division, Government of India.
- *MeitY's E-Governance Assessment Frameworks*. Ministry of Electronics and Information Technology, Government of India.

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

DISCIPLINE SPECIFIC CORE COURSE
GENDER, DIVERSITY AND INCLUSION

CREDIT DISTRIBUTION,ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Gender, Diversity and Inclusion	**4**	**3**	**1**	**-**	**As per admission requirements**	**Should have studied a paper on gender**

Learning Objectives

1. To strengthen deep conceptual understanding of gender, power, identity, and social inequalities using feminist and intersectional perspectives.
2. To enable students to critically analyse how systems, institutions, and everyday practices shape inclusion and exclusion.
3. To build the capacity to design inclusive environments, policies, and organisational cultures rooted in gender justice and human rights.

Learning Outcomes

The students will be able to:

1. Explain and apply key gender theories, feminist frameworks, and intersectional analysis.
2. Critically assess how institutions produce exclusion based on gender, caste, class, sexuality, disability, and other identities.
3. Recommend practical, ethical, and socially just inclusion strategies across organisations, communities, and public systems.
4. Interpret contemporary debates and policies related to gender rights, inclusion, and social justice.

THEORY
(CREDITS 3, HOURS 45)

Unit I: Foundations of Gender, Diversity & Inclusion **12 hours**

This unit builds the foundational concepts and theoretical lenses used to understand gender, diversity, and inclusion.

• Conceptual distinctions: sex, gender, gender identity, diversity, inclusion
• Feminist theories: liberal, Marxist, radical, Dalit feminist thought

• Intersectionality and social location (caste, class, race, disability, sexuality)
• Socialisation, identity formation, and stereotyping
• Power, privilege, and systemic discrimination
• Historical evolution of gender justice movements (India & global)

Unit II: Gender, Diversity & Social Institutions. 13 Hours

This unit examines how social institutions shape, reinforce, or challenge inequality. Students learn to analyse structural dynamics across everyday and formal systems.

• Family, kinship, caste, religion and gender norms
• Education systems: curriculum bias, access, representation
• Labour and economy: occupational segregation, wage gaps, care economy
• Media and digital spaces: representation, body politics, stereotyping
• State institutions and governance: gender-responsive policies
• Social protection systems and exclusion

Unit III: Diversity, Inclusion & Organisations 10 hours

This unit deepens understanding of legal frameworks, and global benchmarks. It emphasises practical approaches for workplace equity.

• Concepts of diversity management and inclusive leadership
• Organisational culture and gender mainstreaming
• Tools: gender audits, climate assessments, inclusion checklists
• Legal frameworks: POSH Act 2013, equal opportunity policies
• Inclusive HR systems: recruitment, retention, career progression
• DEI in corporate, public, and development sectors

Unit IV: Creating Gender-Inclusive Environments – Policies, Practices & Social Change

10 Hours

This unit guides students to envision, design, and advocate for inclusive practices in organisations, communities, and public life. Focus is on real-world strategies and change-oriented thinking.

• Gender-inclusive organisational cultures
• GDI audits and measures for organisations- Global and National trends
• Building safe, accessible, gender-sensitive spaces
• Gender-responsive public policies (education, health, transport, urban design)
• Role of civil society, movements, and digital activism
• Community-engaged approaches for inclusion
• Case studies: gender-transformative programmes in India and globally

TUTORIAL
(Credits 1, Hours 15)

- Feminist text discussions (hooks, Menon, Rege, Crenshaw)
- Documentary screenings and analysis
- Debates on body politics, masculinity, rights
- Accessibility and safety walk-throughs on campus
- Discussions with activists, NGOs, or community representatives
- Policy review of gender laws and inclusive rights frameworks

Essential Readings

UNIT-1

- Borah, P. (2022). *Gender in Contemporary India: Issues and Debates*. Sage.
  Butler, J. (2016). *Gender Trouble* (Anniversary ed.). Routledge.

UNIT-II

- Crenshaw, K. (2017). *On Intersectionality: Essential Writings*. The New Press.
- Connell, R. (2020). *Gender in World Perspective* (4th ed.). Polity.
- Gopal, M. (2019). *Intersections: Gender, Caste, and Class in India*. Zubaan.

UNIT-III

- Hooks, B. (2015). *Feminism Is for Everybody*.
- Routledge.Kumar, N. (2021). *Gender and Society in India*. Routledge.

UNIT-IV

- Shaw, J., & Lee, J. (2021). *Women's Voices, Feminist Visions* (8th ed.). McGraw-Hill.
  UN Women. (2023). *Progress of the World's Women Report*.

Suggested Readings

- Gopal, M. (2019). *Intersections: Gender, Caste, and Class in India*. Zubaan.
- Bhasin, K. (2018). *What Is Patriarchy?* Women Unlimited.
- Dhar, R. (2023). *Gendering Governance in India*. Orient BlackSwan.
- Mor Barak, M. (2022). *Managing Diversity*. Sage.
- Sen, A. (2021). *The Argumentative Indian*. Penguin.Dhar, R. (2023). *Gendering Governance in India*. Orient BlackSwan.

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

.

DISCIPLINE SPECIFIC CORE COURSE
SOCIAL AND BEHAVIOUR CHANGE: THEORY & PRACTICE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Social and Behaviour Change: Theory & Practice	4	2	0	2	As per admission requirements	Should be aware of concept of Communication for Development and Behaviour Change

Learning Objectives

- To develop an understanding of correlations between Human Behavior and Social and Behaviour Change
- To appraise the diverse theories and models related to Social and Behavior Change.
- To design Social and Behavior Change strategies that tackle a range of social and development issues.

Learning Outcomes

The students would be able to:

- Co-relate Human behaviour and Social and Behaviour Change.
- Gain knowledge and proficiency in applying SBC concepts by appreciating the diverse theories and models related to Social and Behavior Change.
- Develop a SBC intervention tool kit for any social/development related issue.

THEORY

(Credits 2; Hours 30)

UNIT I: Human Behavior: An Insight **8 Hours**

This unit underpins on the correlation between the multi-faceted and multi-layered nature of human behaviour.

- Human Behavior and its multi-faced nature

- Perception, Persuasion and Thinking
- Attitude: Definition, formation, Mapping attitudes: models and theories
- Heuristics and Biases

UNIT II: Foundations of SBC **8 Hours**

This unit describes the concept, process and paradigm shifts in Social and Behavior Change.

- Social and Behaviour Change: Concept & Relevance
- Difference between IEC, BCC, SBCC and SBC
- Process of SBC
- Paradigm shifts in SBC: scope and relevance.
- Need and Relevance of SBC Strategies

UNIT III: Social and Behaviour Change: Theories & Models **8 Hours**

This unit explores the continuum of various SBC theories, models and its applications.

- Key concepts in SBC Theory: Individual and Social, Control, Threat, Risk, Reflection, Deliberation and Technologies & Innovation.
- Participatory theories and EE theories, Bullet Behavioural Theory
- Theories of Individual Behaviour Change: Theory of Planned Behaviour and Theory of Reasoned Action, Socio-ecological model, Health Belief Model, Stages of Change theory, Transtheoretical Model
- Nudges for behavior change
- Theories of Behavioural Economics: Decision Theory, Prospect Theory, Nudge Theory, Behavioural Game Theory, Evolutionary Psychology and others.

UNIT IV: Social and Behaviour Change: Applications **6 Hours**

This unit explores the areas and potential of SBC applications.

- Applications of Behavioural economics and Social and Behavioural Change
- Application of SBC theories in strategizing communication for change: Design of communication strategies and messages
- SBC in addressing various issues such as health, environmental, and social justice

PRACTICAL

(Credits 2; Hours 60)

- Personality and Human Behaviour: Assessment and relevance
- Perception, Learning and Thinking: How perception makes a difference in understanding and interpreting communication messages
- Attitude measurement and relevance
- Approaches to SBC: Identifying what works and what does not
- SBC campaigns- elements,
- SBC campaigns- tools and techniques
- Critical Analysis of SBC Campaigns and strategies
- Analysis of campaign’s theory of change messages using behavioural theories
- Monitoring and Evaluation (M&E): Importance of M&E in SBC programs, Key indicators for assessing impact, Tools and techniques for tracking progress and refining strategies

Essential Readings

UNIT- I

- Bargh, J. A. (2017). *Before you know it: The unconscious reasons we do what we do*. New York, NY: Touchstone.
- Fiske, S. T., & Taylor, S. E. (2017). *Social cognition: From brains to culture* (3rd ed.). London, UK: Sage Publications.
- Stanovich, K. E., West, R. F., & Toplak, M. E. (2016). *The rationality quotient: Toward a test of rational thinking*. Cambridge, MA: MIT Press.

UNIT- II

- Fishbein, M., & Ajzen, I. (2015). *Predicting and changing behavior: The reasoned action approach*. New York, NY: Psychology Press.
- Manyozo, L. (2017). *Media, communication and development: Three approaches*. New Delhi, India: Sage Publications.
- UNICEF. (2019). *Communication for development (C4D): Social and behavior change*. New York, NY: UNICEF.

UNIT- III

- Ajzen, I. (2020). *Attitudes and persuasion*. Cambridge, UK: Cambridge University Press.
- Michie, S., Atkins, L., & West, R. (2016). *The behaviour change wheel: A guide to designing interventions*. London, UK: Silverback Publishing.
- Singhal, A., Cody, M. J., Rogers, E. M., & Sabido, M. (Eds.). (2015). *Entertainment-education and social change: History, research, and practice*. New York, NY: Routledge.

UNIT- IV

- Datta, S., & Mullainathan, S. (2017). Behavioral science and policy design. *Harvard Business Review*, 95(6), 44–53.
- Dolan, P., Hallsworth, M., Halpern, D., King, D., & Vlaev, I. (2015). Mindspace: Influencing behaviour through public policy. *Journal of Economic Psychology*, 45, 3–17. https://doi.org/10.1016/j.joep.2014.11.002

Recommended Readings

- *Communication for social change: Context, social movements and the digital era* (2025). SAGE India.
- *Public health communication message design* (2025). SAGE India.
- Vaijappa, G., & Das, A. (Eds.). (2022). *Communication and social development perspective in India*. Mysore Book House

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
PROJECT MANAGEMENT & GRANT WRITING

CREDIT DISTRIBUTION,ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Project Management & Grant Writing	**4**	**3**	**-**	**1**	**As per admission requirements**	

Learning Objectives

1. To develop conceptual understanding and practical knowledge of project cycle management.
2. To equip learners with knowledge about sources for financing developent projects and skills to design, manage, and monitor development projects effectively.
3. To train students in writing persuasive, evidence-based project proposals and grant applications tailored to donor requirements.

Learning Outcomes

The students will be able to:

- Explain key principles, frameworks, and stages of project management.
- Apply project management tools for effective planning, budgeting, implementation, and evaluation.
- Prepare a complete project proposal including logical framework, budget, and monitoring plan.
- Demonstrate skills in identifying funding agencies and writing competitive grant applications.
- Critically assess project sustainability, stakeholder engagement, and ethical dimensions of project implementation.

THEORY
(Credits 3, Hours 45)

Unit I: Introduction to Project Management 10 Hours

This unit provides an overview of the concepts, life cycle, and frameworks in project management, emphasizing planning, feasibility, and alignment with organizational goals.

- Meaning, scope, and importance of project management in development and research contexts
- Project life cycle: initiation, planning, execution, monitoring, and closure
- Project Management Methodologies: Traditional (Waterfall) and modern (Agile, Scrum) approaches

- Project planning: Project charter, feasibility studies, and project selection models. Stakeholder identification and needs assessment
- Logical Framework Approach (LFA) and Theory of Change (ToC) as planning tools

Unit II: Project Design and Implementation 10 hours

This unit focuses on designing projects through frameworks, work plans, and budgets, and explores effective implementation and leadership approaches.

- Steps in project design and formulation
- Setting goals, objectives, outputs, outcomes, and indicators
- Developing work breakdown structures (WBS)
- Risk assessment and mitigation strategies
- Project Budgeting & Scheduling: types of costs, cost estimating, budget heads, justification, cost–benefit analysis, Time management of projects
- Quality control and Performance management
- Leadership & Team Building: Leading and managing project teams, conflict resolution, and negotiation.
- Organizational structures and Culture & Project management
- Gender, Diversity, inclusion, and sustainability perspectives in project design

Unit III: Development Finance 15 Hours

This unit focuses on identifying financing opportunities, aligning ideas with financial stakeholders priorities.

- Understanding Development Financing ecosystem: National and international funding agencies
- Mobilizing Capital: Strategies to unlock investment from public, private, domestic, and international sources for sustainable development goals (SDGs).
- Microfinance and digital finance (Fintech) in expanding financial access for households & development
- Development Finance Institutions (DFIs): The function, business models, and operational methods of DFIs and multilateral development banks (MDBs).
- Sustainable and Climate Finance: Integrating climate action and ESG (Environmental, Social, and Governance) considerations into financing mandates and using instruments like blended finance, Green bonds etc
- Social Impact Investing
- Identifying funding opportunities & calls for proposals: Funding databases, donor mapping, and eligibility assessment

Unit IV: Grant Writing Funding Management, and Reporting 10 Hours

This unit focuses on developing a proposal and post-award project management including grant compliance, tracking progress, financial accountability, and donor reporting.

- Developing a compelling concept note: Framing problem statements, goals, and rationale based on evidence
- Structuring winning proposal.
- Budget preparation: Cost estimation, justification, and linking budgets to outcomes
- Persuasive writing skills: Tone, clarity, logic, and storytelling in proposal writing
- Grant management cycle: Pre-award, post-award, and close-out stages

- Understanding grant agreements and compliance: Roles, deliverables, reporting timelines, and fund utilization norms
- Preparing technical and financial reports.
- Donor Communications & relations: Communicating with funders, building credibility, and maintaining transparency, sharing learnings, outcomes, and future engagement with donors & stakeholders

PRACTICAL
(Credits 1, Hours 30)

- Development finance agencies case studies
- Tools for situation and problem analysis: SWOT, problem tree, needs mapping
- Tools: Gantt charts, results framework, outcome mapping, and KPI tracking
- Preparing technical and financial reports for donors
- Grant Scoping Exercises: Students identify 3 relevant funding agencies for their project area and summarize eligibility, focus areas, and deadlines.
- Develop a Project Proposal for a Development issue: Draft a 1-page concept note for a development project.
- Peer-assess proposals using actual donor evaluation criteria.
- Create a sample project budget linking costs with outcomes.

Essential Readings

UNIT- I

- United Nations Development Programme. (2020). *Handbook on planning, monitoring and evaluating for development results*. UNDP.
- Bakewell, O., & Garbutt, A. (2015). The use and abuse of the logical framework approach. *Third World Quarterly, 26*(6), 915–932.

UNIT- II

- Kettner, P. M., Moroney, R. M., & Martin, L. L. (2016). *Designing and managing programs: An effectiveness-based approach* (5th ed.). SAGE Publications.
- Desai, V. (2022). *Project management and social development: Principles and practice*. SAGE Publications India.

UNIT- III

- Rao, P. K. (2018). *Development finance* (2nd ed.). Springer.
- Ghosh, J. (2019). Development finance and inclusive growth in India. *Economic and Political Weekly, 54*(17), 36–43.
- United Nations. (2020). *Financing for sustainable development report*. United Nations Department of Economic and Social Affairs.

UNIT-IV

- Khanna, R., & Kapoor, S. (2021). *Grant writing and fundraising for Indian NGOs: A practical guide*. Routledge India.
- Ebrahim, A. (2019). Measuring social change: Performance and accountability in complex worlds. *Stanford Social Innovation Review, 17*(2), 28–35.

- Government of India. (2020). *General Financial Rules (GFR), 2017 (Updated edition)*. Ministry of Finance.

Suggested Readings

- Bryson, J. M. (2018). *Strategic planning for public and nonprofit organizations.* Jossey-Bass.
- Chambers, R. (2017). *Whose reality counts? Putting the first last.* Intermediate Technology Publications.
- Gido, J., & Clements, J. P. (2018). *Successful project management* (7th ed.). Cengage Learning.
- Kapoor, I., & Sharma, R. (2020). *Grant writing for social impact: Principles and practice.* Sage Publications.
- Kothari, C. R., & Garg, G. (2022). *Research methodology: Methods and techniques* (5th ed.). New Age International.
- Joshi, S. (2023). *Resource Mobilization and Proposal Writing for Development Professionals*. New Delhi: Rawat Publications.
- The World Bank. (2021). *Project cycle management guidelines.*

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
PEACE, HUMAN RIGHTS AND HUMANITARIAN ACTION

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Peace, Human Rights and Humanitarian Action	4	3	1	0	As per admission requirements	Nil

Learning Objectives:

- To understand the foundational concepts of peace, conflict, and violence and their interlinkages with development and human rights.
- To analyse the evolution, legal frameworks, and key debates in the field of human rights.
- To examine the principles, legal instruments, and operational challenges of humanitarian action.
- To develop skills in applying communication strategies for peacebuilding, human rights advocacy, and ethical humanitarian reporting.

Learning Outcomes:

The students would be able to:

- Differentiate between key concepts such as negative/positive peace and direct/structural violence, and apply relevant theories.
- Critically evaluate the international human rights and humanitarian legal architecture and its functioning.
- Analyse the roles, responsibilities, and dilemmas of various actors in the humanitarian ecosystem.
- Design context-appropriate and ethical communication strategies for conflict resolution, rights advocacy, and social cohesion.

THEORY
(Credits 3; Hours 45)

UNIT I: Conceptual Foundations: Peace, Conflict, and Violence **12 Hours**

This unit introduces the interlocking frameworks of peace, rights, and humanitarianism. It explores the meanings of peace and conflict, the dimensions of violence, and the major theoretical approaches that inform this field.

- Conceptual Foundations: The Interlocking Frameworks of Peace, Rights, Humanitarianism, and Development.
- Understanding Peace: Negative vs. Positive Peace; Peace-keeping, Peace-making, and Peace-building.
- Conflict: Sources, Types, and Implications.
- Violence and its Dimensions: Direct, Structural, and Cultural Violence, Everyday Violence.
- Theories and Approaches: Realist, Liberal, and Critical Theories (Gandhian, Feminist).
- Indian Context: Conflict and peace process (communal conflict, caste violence, gender violence, resistance movements).

UNIT II: Human Rights: Evolution, Frameworks, and Violations 11 Hours

This unit delves into the evolution, significance, and core debates surrounding human rights. It examines the key legal instruments and analyses contemporary human rights issues, with a specific focus on India.

- Understanding Human Rights: Significance, History, and Generations of Rights.
- Key Debates: Universality vs. Cultural Relativism; The Capabilities Approach (Sen, Nussbaum).
- Core Legal Instruments: The Universal Declaration of Human Rights (UDHR), International Covenants (ICCPR, ICESCR), Human Rights in the Indian Constitution.
- Human Rights Violations in Conflict Zones.
- Issues of Human Rights in India: Dalit and Adivasi Groups, Women and Children in Armed Conflict Zones, Human Rights and Climate Change.

UNIT III: Humanitarian Action: Principles, Law, and Praxis 11 Hours

This unit focuses on the system of humanitarian action, its guiding principles, and legal foundations. It critically examines the roles of international and national actors, coordination mechanisms, and operational challenges.

- Humanitarianism: Core Principles (Humanity, Impartiality, Neutrality, Independence).
- International Humanitarian Law (IHL): Geneva Conventions and their Additional Protocols.
- International Refugee Law: The 1951 Refugee Convention and its application in South Asia.
- Key Institutions & Coordination: UN Agencies (OCHA, UNHCR), Red Cross/Crescent Movement, NGOs (International and national), and the Cluster System.
- Accountability Frameworks: International Criminal Court (ICC), Responsibility to Protect (R2P).
- Critiques and Challenges: The "Humanitarian Imperative," Decolonial Perspectives, and Operational Dilemmas.
- Understanding Humanitarian aids and actions in Indian context

UNIT IV: Communication for Peace, Human Rights and Humanitarian Action 11 Hours

This unit explores the central role of communication in these fields, focusing on strategic, ethical, and practical applications in media, advocacy, and community engagement.

- Dialogue and Negotiation
- Media, Conflict & Peace: War Journalism vs. Peace Journalism; Countering Hate Speech and Misinformation.
- Humanitarian Communication & Ethics: The Politics of Imagery; critiques of "poverty porn" and ethical storytelling.

- Communication for Social Cohesion & Rights: Using SBCC for Peacebuilding; Participatory Communication (Community Radio, Participatory Video).
- Human Rights Advocacy & Campaigning: Developing a Communication Strategy, Stakeholder Mapping, and Crafting Policy Briefs.

Tutorial
(Credit 1; Hour 15)

- Analyse and compare media coverage of a conflict, identifying frames of War Journalism vs. Peace Journalism.
- Develop a stakeholder map and a one-page policy brief for a chosen human rights issue in India.
- Critically analyse the visual rhetoric and narrative of a humanitarian fundraising campaign.
- Design a concept note for a participatory communication project (e.g., using community radio) to address a local conflict or rights violation.
- Simulate the development of a core message and communication channel strategy for a humanitarian cluster responding to a disaster.

Essential Readings:

UNIT- I

- Galtung, J. (2015). *Peace by peaceful means: Peace and conflict, development and civilization* (Updated ed.). SAGE Publications.
- Chatterjee, P. (2018). *The politics of the governed: Reflections on popular politics in most of the world*. Columbia University Press.
- Rege, S. (2019). *Caste, violence, and democracy*. Oxford University Press India.

UNIT- II

- Nussbaum, M. C. (2016). *Creating capabilities: The human development approach*. Harvard University Press.
- Baxi, U. (2018). *Human rights in a posthuman world: Critical essays*. Oxford University Press India.
- Kothari, S. (2017). Human rights movements and the Indian state. *Journal of Human Rights Practice, 9*(2), 289–304.

UNIT- III

- Banerjee, D., & Duflo, E. (2019). Humanitarian crises, displacement, and development responses. *World Development, 117*, 1–12.
- Chaudhuri, S. (2020). India's humanitarian response to disasters: Institutions and challenges. *Indian Journal of Public Administration, 66*(2), 213–229.
- UNOCHA. (2021). *Humanitarian principles and coordination mechanisms*. United Nations Office for the Coordination of Humanitarian Affairs.

UNIT- IV

- Thomas, P. N. (2017). *Communication and human rights*. SAGE Publications India.
- UNESCO. (2020). *Journalism, fake news & disinformation: Handbook for journalism education and training*. UNESCO Publishing.

Suggested Readings:

- Gupta, N. (Ed.). (2021). *Social justice and human rights in India*. IBP Books
- *Human rights and Indian literary communities* (Ed.). (2026). Routledge.
- Richmond, O. P., & Pogodda, S. (Eds.). (2024). *Peacebuilding: A very short introduction* (Vol. 2). Oxford University Press.

DISCIPLINE SPECIFIC ELECTIVE COURSE

TRAINING AND CAPACITY BUILDING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Training and Capacity Building	**4**	**2**	**0**	**2**	**As per admission requirements**	**Should be aware of the concept and significance for training for development**

Learning Objectives

1. To familiarize with the concept and significance of training for development.
2. To understand the training process and the functions of different phases of training.
3. To know how different training approaches can be used to achieve various development goals.
   - To impart knowledge and skills for conducting effective training to deal with development challenges.

Learning Outcomes

The students would be able to:

- Assess the importance and scope of training for development.
- Learn the functions of different phases of the training process.
- Conceptualize and implement need-based training programs for different stakeholders to build knowledge, attitudes and skills
- Critically evaluate the different training strategies and their role in promoting development.

THEORY

(Credits 2; Hours 30)

UNIT I: Training for Development: Concept **8 Hours**

This unit explores the significance of training and capacity-building initiatives in fostering professional growth, organizational effectiveness, and societal development.

- Importance and Scope of Training for Development- National and Global Perspectives
- Government policies, programs, and institutions for training and capacity building for development initiatives

- Types, Approaches, Models, Theories, and Methods of training for bridging the gaps in knowledge, attitudes, and skills
- Principles of adult learning, Learning theories, and models
- Training and capacity building needs of various client groups- communities; field level, midlevel, and other functionaries of development agencies, corporates and others

UNIT II: Training Tools **6 Hours**

This unit covers various training methodologies emerging innovations in the field of training and development. It also lays emphasis on Training Tools and Strategies

- Training methods– types, purpose, advantages, limitations, applications, and adaptations
- Participatory methods (lecture, demonstration, role play, case study, games, simulations, use of audio-visual aids, and technology-based methods)

Unit III: Being an Effective Trainer **6 Hours**

This unit throws light on self-development of a trainer, his/her key roles a competency.

- Self-development of a trainer
- Roles and competencies of an effective trainer
- Mobilizing and working with small groups for training- communication, leadership, group dynamics, conflict resolution, team building
- Training needs assessment of individuals and organizations- techniques and their application

UNIT IV: Designing, Executing, and Evaluating Training Modules **10 Hours**

- Analysis of training programs for different stakeholders
- Designing and conducting training programmes for development- objectives, learning outcomes, contents, methods, materials & resources, feedback, evaluation, and budget
- Tools and techniques for training needs assessment: Surveys, Interviews, Focus Group Discussions and Skill Gap Analysis
- Understanding various learning goals and outcomes for specific target groups
- Development of Training modules and materials: manuals, presentations, case studies, and e-learning resources
- Implementation of training programmes: Time management, resource allocation, and participant engagement strategies
- Importance and Methods of evaluation, follow-up, and impact assessment of training: Methods, Models, tools and techniques, and innovations

PRACTICAL
(Credits 2; Hours 60)

- Self-development exercises for trainers
- Exercises in Team building
- Exercises on Leadership development
- Practice of participatory training tools and techniques: on-site
- Practice of participatory training tools and techniques: online using digital technology and AI tools
- Conduct a training needs analysis for an organization
- Plan and Design a training program
- Conduct a training program
- Critical Evaluation of Prior Training Programs

- Designing and Conducting a ToT for different stakeholders
- Development of Training IEC

Essential Readings

UNIT- II

- Noe, R. (2017). Employee training & development (7th ed.). New York, NY: McGraw-Hill Education. ISBN: 978-0-07-811285-0.
- Silberman, M. (Mel). (2015). Active training: A handbook of techniques, designs, case examples, and tips. (any edition). San Francisco, CA: Pfeiffer. ISBN: 9781118972014.

UNIT- II

- Noe, R. A. (2017). *Employee training and development* (7th ed.). New York, NY: McGraw-Hill Education.
  (Training methods, participatory tools, technology-based learning)
- Salas, E., Tannenbaum, S. I., Kraiger, K., & Smith-Jentsch, K. A. (2015). The science of training and development in organizations. *Psychological Science in the Public Interest*, 13(2), 74–101. https://doi.org/10.1177/1529100612436661

UNIT- III

- Knowles, M. S., Holton, E. F., & Swanson, R. A. (2015). *The adult learner: The definitive classic in adult education and human resource development* (8th ed.). London, UK: Routledge.
  (Adult learning, trainer roles, competencies, self-development)
- Northouse, P. G. (2018). *Leadership: Theory and practice* (8th ed.). Thousand Oaks, CA: Sage Publications.
  (Group dynamics, leadership, communication, and team building for trainers)

UNIT- IV

- Kirkpatrick, D. L., & Kirkpatrick, J. D. (2016). *Evaluating training programs: The four levels* (4th ed.). Oakland, CA: Berrett-Koehler.
  (Evaluation, impact assessment, and follow-up)
- Goldstein, I. L., & Ford, J. K. (2015). *Training in organizations: Needs assessment, development, and evaluation* (4th ed.). Belmont, CA: Cengage Learning.
  (Training needs assessment, module design, implementation, and evaluation)

Suggested Readings

- Preskill, H., & Russ-Eft, D. (2016). *Building evaluation capacity: Activities for teaching and training* (2nd ed.). SAGE Publications.
- Mohanty, B. P., Sinha, A., Phand, S., Das, S., & Basade, Y. (Eds.). (2024). *Capacity building in fisheries and aquaculture*. NIPA.
- *Emerging pedagogies for policy education: Insights from Asia*. (2024). Springer/Academic Press.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

ESG, SUSTAINABILITY REPORTING AND SOCIAL IMPACT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
ESG, Sustainability Reporting and Social Impact	**4**	**3**	**-**	**1**	**As per admission requirements**	

Learning Objectives

1. To develop a comprehensive understanding of ESG principles, frameworks, and standards and their implications for corporate and development sectors.
2. To analyse sustainability reporting mechanisms, disclosure practices, and evaluation metrics in national and international contexts.
3. To assess social impact, ethical governance, and sustainable value creation through case-based and analytical approaches.

Learning Outcomes

The students will be able to:

1. Explain the evolution and components of ESG and sustainability frameworks.
2. Critically analyse sustainability and CSR reports across sectors.
3. Apply ESG metrics to evaluate organizational performance.
4. Conduct social impact assessments and interpret sustainability data.
5. Recommend strategies for inclusive and transparent ESG reporting aligned with global best practices.

THEORY
(Credits 3, Hours 45)

Unit I: ESG Foundations and Evolution 10 Hours

This unit introduces the origins, philosophy, and evolution of ESG and sustainability in the corporate and development sectors.

- Emergence of ESG: Historical evolution and global milestones
- Principles of ESG: Environmental stewardship, social responsibility, governance ethics
- Relationship between ESG, CSR, and Sustainable Development Goals (SDGs)
- ESG in the Indian context: SEBI regulations, BRSR (Business Responsibility and Sustainability Report)

- Role of ESG in corporate reputation, investment, and risk management
- Institutional and policy drivers: UN Global Compact, PRI, GRI

Unit II: Sustainability Reporting and Disclosure Frameworks 13 Hours

This unit focuses on global and national sustainability reporting frameworks, emphasizing transparency, accountability, and disclosure standards.

- Sustainability reporting: Purpose, process, and principles
- Overview of GRI Standards, SASB, TCFD, and Integrated Reporting frameworks
- Business Responsibility and Sustainability Reporting (BRSR) – SEBI guidelines (2021 onwards)
- ESG disclosures in Indian companies
- Data metrics and indicators for ESG performance
- Assurance, verification, and third-party validation of ESG reports

Unit III: Social Impact Assessment and Measurement 12 Hours

This unit emphasizes tools and methodologies for assessing social and environmental impacts of programmes, businesses, and policies.

- Understanding social impact: definitions and frameworks
- Theories of change and logic models for impact measurement
- Social Return on Investment (SROI), cost-benefit analysis, and qualitative indicators
- Impact measurement in CSR, NGO, and corporate programmes
- Role of technology, AI, and big data in sustainability analytics
- SDGs and ESG disclosures

Unit IV: Social Impact Assessment, Measurement, and Future of ESG 10 Hours

This unit emphasizes social and environmental impact measurement, while exploring future ESG trends, challenges, and technological innovations.

- Understanding and measuring social impact – theories and frameworks
- Tools for social impact analysis
- Linking impact assessment with ESG goals and SDGs
- Technology and AI in ESG data management and impact measurement
- Ethical governance, greenwashing, and accountability issues in ESG reporting
- Future trends: green finance, carbon accounting, ESG investing, and global sustainability innovations

PRACTICAL
(Credits 1, Hours 30)

- Mapping evolution of ESG standards through a timeline
- Analysing BRSR framework for an Indian corporate companies
- Understanding ESG vs CSR
- Comparative analysis of two sustainability reports (one Indian, one international)
- Evaluation of ESG disclosure compliance
- Case study analysis: Social Impact Assessment (SIA) of a CSR project

- Developing an ESG strategy framework for a hypothetical company
- ESG-driven business innovation

Essential Readings

UNIT- I

- Bhattacharya, C. B., Korschun, D., & Sen, S. (2021). *Leveraging corporate responsibility: The stakeholder route to maximizing business and social value*. Cambridge University Press.
- Desai, V. (2022). *Sustainability, corporate governance, and responsibility in India*. SAGE Publications India.

UNIT- II

- Securities and Exchange Board of India. (2021). *BRSR core and assurance requirements*. SEBI.
- OECD. (2022). *ESG investing and sustainability disclosure frameworks: Global perspectives*. OECD Publishing.
- Institute of Chartered Accountants of India. (2020). *Integrated reporting framework and sustainability disclosures in India*. ICAI.

UNIT- III

- Desai, V., & Potter, R. B. (2018). *The companion to development studies* (3rd ed.). Routledge India.
- Nicholls, J., Lawlor, E., Neitzert, E., & Goodspeed, T. (2015). *A guide to social return on investment*. Social Value UK.
- Bandyopadhyay, S. (2021). Technology-driven impact measurement in Indian development programmes. *Economic and Political Weekly, 56*(23), 52–59.

UNIT- IV

- World Economic Forum. (2022). *Measuring stakeholder capitalism: Towards common ESG metrics*. WEF.
- SEBI. (2023). *BRSR core: ESG assurance and disclosure requirements*. Securities and Exchange Board of India.

Suggested Readings

- Singh, R., & Mishra, S. (2023). *Corporate Sustainability and Social Responsibility in India: Policy, Practice, and Performance*. New Delhi: Rawat Publications.
- Elkington, J. (2018). *The Triple Bottom Line: Does It All Add Up?* Routledge.
- Kumar, R., & Sharma, P. (2022). *Sustainability Reporting: A Practitioner's Guide for Indian Corporates*. New Delhi: PHI Learning.
- UNDP. (2020). *Impact Measurement and Management for the SDGs*. United Nations Development Programme.
- KPMG. (2023). *Sustainability Reporting Survey 2023*. KPMG International.
- Singh, P. (2021). *Environmental, Social and Governance (ESG): The Indian Context*. New Delhi: Excel Books.

DISCIPLINE SPECIFIC ELECTIVE COURSE
LIFELONG LEARNING AND LIFE SKILLS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Lifelong Learning and life Skills	4	3	1	0	As per admission requirements	

Learning Objectives

- To Understand key concepts, historical evolution, and terminology related to adult and lifelong learning in India and globally.
- To analyze national and international programmes and policies that shape lifelong learning, including the role of NGOs, industries, and global declarations.
- To examine life skills development among adolescents and youth, including skill acquisition processes, training principles, and learning techniques.
- To develop competencies to design, implement, and evaluate lifelong learning programmes, including needs assessment, training methods, and use of technology.

Learning Outcomes

The students would be able to:

- Explain major concepts, historical developments, and educational structures shaping lifelong and adult learning in India and internationally.
- Evaluate policy frameworks, programmes, and institutional roles in promoting lifelong learning at national and global levels.
- Apply principles of life skills training to design learning interventions for adolescents and youth using varied pedagogical approaches.
- Design and operationalize lifelong learning programmes through competency identification, training design, and technology-enabled learning tools.

THEORY
(Credits 3; Hours 45)

UNIT I: Foundations of Adult and Lifelong Learning — 10 Hours

This unit introduces the historical development of adult and lifelong learning in India, key concepts such as andragogy, pedagogy, and lifelong learning, and various forms of education. It also examines early national programmes that laid the foundation for literacy and continuing education.

- Historical perspective of Adult and Lifelong Learning in India – Pre- and Post-Independence
- Concepts and terminologies: Andragogy & Pedagogy, Lifelong Learning, Continuing Education
- Types of education: Formal, Non-Formal, Incidental Learning; Illiteracy and its forms

- Indian Adult / Lifelong Learning Programmes: Social Education, Gram Shiksha Mohim, Farmer's Functional Literacy Programme

UNIT II: National Lifelong Learning Policies and Programs 10 Hours

This unit explores India's major policies, national missions, and Five-Year Plan approaches to lifelong learning. It focuses on the developmental role of lifelong education and highlights emerging national needs and future directions.

- National Adult Education Programme and National Literacy Mission
- Approaches to Continuing Education / Lifelong Learning in different Five-Year Plans
- Lifelong Learning and Development: Social, Economic, Political and Cultural dimensions
- Emerging needs and future perspectives of Lifelong Learning

UNIT III: International and Sectoral Perspectives on Lifelong Learning 15 Hours

This unit provides global and sectoral perspectives, emphasizing international declarations, NGO roles, industry learning needs, and regional trends across Asia and SAARC. It also reviews major national and international frameworks shaping lifelong learning.

- Lifelong Learning needs of industries; Role of NGOs and Zilla Saksharta Samitis
- UNESCO Declaration on Adult and Lifelong Learning; Hamburg Declaration (1997)
- Mumbai Declaration on Role of Higher Education; Bharat GyanVigyan Jatha and Literacy House
- Trends in Adult & Lifelong Learning in Asia with focus on SAARC; National initiatives like Saakshar Bharat and international frameworks

UNIT IV: Adolescents, Youth and Life Skills Education 10 Hours

This unit examines the nature and types of life skills, processes of skill acquisition, and methods for life skills training. It highlights individual, family, institutional, and community approaches to strengthening youth competencies for personal and social development.

- Life skills: nature, classification and measurement
- Individual skills for self-identity
- Traditional family-based and institution-based skills acquisition processes
- Participatory and community-based skills acquisition processes; Principles of life skills training, learning aids, and training techniques

TUTORIAL

(Credits 1; Hours 15)

- Field Visit to an Adult Education Centre: Observe teaching methods, learner profiles, and programme structures in real settings.
- Case Study Analysis of National Literacy Mission: Review achievements, challenges, and innovations through structured analysis.
- Survey on Lifelong Learning Awareness: Conduct a small survey among adults to assess motivations, barriers, and learning needs.
- Mapping Local NGOs Working in Lifelong Learning: Prepare a brief report on their role, activities, and community reach.
- Document Review of UNESCO and Hamburg Declarations: Summarize key principles and implications for India in a practical worksheet.
- Industry Skill-Needs Assessment (Mini Exercise): Interview an HR professional or use secondary data to identify emerging skill demands.

- Design a Micro Training Module: Prepare a simple module for adult learners on topics such as digital literacy or financial literacy.
- Life Skills Training Activity for Youth: Conduct a role-play, group discussion, or problem-solving session based on one life skill (e.g., decision-making, communication).
- Participatory Rural Appraisal (PRA) Simulation: Practice community-based tools such as social mapping or seasonal calendars to identify learning needs.

Essential Readings:
UNIT- I

- Government of India. (2018). *Adult education and lifelong learning in India: Policy perspectives*. Ministry of Education.
- Indira Gandhi National Open University. (2022). *Lifelong learning: Issues and concerns* (Block-4). eGyanKosh.
- Jarvis, P. (2018). *Adult education and lifelong learning: Theory and practice* (4th ed.). Routledge.

UNIT- II

- Government of India. (2020). *New Education Policy 2020*. Ministry of Human Resource Development.
- National Institute of Adult Education. (2019). *Continuing education and lifelong learning in India*. NIAE.

UNIT- III

- UNESCO Institute for Lifelong Learning. (2015). *Rethinking lifelong learning for sustainable development*. UNESCO.
- UNESCO. (2016). *Education 2030: Incheon declaration and framework for action*. UNESCO Publishing.

UNIT- IV

- UNICEF India. (2019). *Life skills education framework for adolescents and youth*. UNICEF India.
- World Health Organization. (2020). *Life skills education for health promotion*. WHO.
- NCERT. (2021). *Adolescent education programme: Life skills modules*. National Council of Educational Research and Training.

Suggested Readings:

- AuthorLastName, F. (2024). *Lifelong learning for capability*. Springer Nature.
- London, M. (Ed.). (2021). *The Oxford handbook of lifelong learning* (2nd ed.). Oxford University Press.
- Jones, J. E., Baran, M., & Cosgrove, P. L. (Eds.). (2024). *Strategies and digital advances for outcome-based adult learning*.

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

Annexure-7

UNIVERSITY OF DELHI

Department of Home Science

Faculty of Science

1-Year M.Sc. Fabric & Apparel Science

Research Track

Department of Home Science

University of Delhi

Course Credit Structure- NEP

2025

The Department of Home Science offers a 1-year master's programme in Fabric & Apparel Science. The programme equips the students with an understanding of design and technology in Fabric and Apparel along with an appreciation of our rich textile culture. The programme strives to build a cadre of professionals in the area of Fabric and Apparel Science. The courses are pitched at providing a strong theoretical base along with skill enhancement through hands-on training. The course aims to provide knowledge of the latest technological advances in textile and apparel sector as well as sensitize students towards the rich textile heritage, crafts and community. The curriculum provides experiential training to students for professional and career readiness with the right skill set needed in a competitive market scenario.

Programme Specific Objectives:

- To equip students with in-depth theoretical knowledge and analytical skills necessary to excel in the fields of fibre science, textile chemistry, apparel technology, sustainability, and fashion systems.
- To develop students' ability to conduct independent and collaborative research, address industry-related challenges, and contribute new knowledge to textile science and apparel technology.
- To encourage learners to integrate sustainable, ethical, and environmentally conscious approaches across textile production, fashion processes, and consumer practices.
- To cultivate respect for traditional textiles, craftsmanship, and cultural heritage, while equipping students with the skills for documentation, preservation, and conservation.
- To prepare graduates for leadership roles in academia, research organizations, textile and apparel industries, quality testing labs, conservation units, and entrepreneurial ventures.
- To enable students to engage with contemporary industrial practices, technological advancements, and global trends through internships, collaborations, and hands-on training.
- To encourage students to apply their expertise in ways that support the textile sector's growth, promote innovation, empower communities, and strengthen India's position in the global textile and fashion domain.

Programme Specific Outcomes:

The post graduate program in the Department of Fabric and Apparel Science, strives to educate and train students to enable them to:

- Demonstrate awareness of contemporary trends, technological innovations, and emerging developments in textiles and apparel, and apply this understanding to research and professional practice.
- Critically analyse and implement sustainable processes and practices across the textile and fashion value chain, promoting environmental responsibility and ethical decision-making.
- Preserve and conserve traditional and heritage textiles, using scientific methods and culturally informed approaches, blending traditional craftsmanship and modern innovation
- Develop a comprehensive understanding of the fundamentals of design concepts and an ability to think critically and creatively

- Understand the fashion industry ecosystem, including design thinking, product development, branding, and retail operations.
- Apply creative, managerial, and technical competencies to pursue diverse careers in academia, industry, research, and entrepreneurship within the textile, fashion, and allied sectors.
- Engage in research, innovation, and development activities that contribute to national growth, industry advancement, and societal well-being.

1 Yr- M.Sc. Fabric and Apparel Science

RESEARCH ONLY

Course Credit Scheme

Program Structure 3: M.Sc. Only Research

Semester	Core Courses		Elective Courses		Research Methodology		Research/Project		Total Credits
	No. of Courses	Total Credits	No. of Courses	Total Credits	No. of Courses	Total Credits	No. of Courses	Total Credits	
I	1	4	1	4	2	4	1	10	22
II	-	-	1	4	1	2	1	16	22
Total Credits for the Course	4		8		6		26		44

List of PGCF courses of M.Sc. Fabric and Apparel Science

(Semester I and II of the One-year programme)

RESEARCH ONLY

List of Courses to be offered to students opting for Structure-3 (Only Research) of M.Sc. in 1st and 2nd Semester of One-Year Course							
Type of Course	Course No.	Semester	Course Title	Credits for each Course			
				Theory	Tutorial	Practical	Total
SEMESTER I							
Discipline Specific Core Course	DSC 1	I	Advancements in Textile and Apparel	3	1	0	4
Discipline Specific Elective Course	DSE 1	I	**From the pool of DSEs given below:** i. Textile Design Development ii. Global Couture iii. Fashion Marketing iv. Advanced Garment Construction v. Advanced Fabric Science vi. Statistics and Data Management	As per the specific course			4
Advanced Research Methodology	ARM 1	I	Advanced Research Methodology	2	0	0	2
Tools for Research	TR 1	I	Tools for Research	2	0	0	2
Dissertation Project/ Entrepreneurship	IP 1	I	Dissertation/Academic project/ Entrepreneurship	0	0	10	10
SEMESTER II							
Discipline Specific Elective Course	DSE 2	II	From the pool DSEs given below	As per the specific course			4
Techniques of Research Writing	TRW 1	II	Techniques of Research Writing	2	0	0	2
Dissertation Project/ Entrepreneurship	IP 2	II	Dissertation/Academic project/ Entrepreneurship	0	0	16	16

Pool of Discipline Specific Elective Courses offered in Semester I				
	Credits for each Course			
	Theory	Tutorial	Practical	Total
i. Textile Design Development	1	0	3	4
ii. Global Couture	3	1	0	4
iii. Fashion Marketing	3	0	1	4
iv. Advanced Garment Construction	2	0	2	4
v. Advanced Fabric Science	3	1	0	4
vi. Statistics and Data Management	3	0	1	4
Pool of Discipline Specific Elective Courses offered in Semester II				
	Credits for each Course			
	Theory	Tutorial	Practical	Total
vi. Commercial Fabrics	3	1	0	4
vii. Women's Wear: Concept to Creation	2	0	2	4
viii. Technical Textiles	3	1	0	4
ix. Psychology of Fashion	3	1	0	4
x. History of Fashion	3	1	0	4
xi. Textile Heritage of India	3	0	1	4
xii. Advanced Textile Colouration	2	0	2	4

Discipline Specific Core Courses

DISCIPLINE SPECIFIC CORE COURSE
ADVANCEMENTS IN TEXTILES AND APPAREL

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Advancements in Textiles and Apparel	4	3	1	0	As per admission criteria	Nil

Learning Objectives

- To learn about the advancements and innovations in textile fibres, yarns and fabric construction methods
- To understand recent technological advancements in textile processing
- To describe the recent developments apparel manufacturing and merchandising
- To understand modern merchandising strategies
- To learn about textile heritage revival and intervention techniques

Learning Outcomes

Students will be able to:

- Develop an understanding of the new advancements in textiles fibres and yarns.
- Evaluate sustainable and eco-friendly processing methods
- Understand CAD/CAM applications, including 3D body scanning and digital prototyping in apparel design.
- Analyze fashion trends, forecasting, branding, and digital marketing.
- Apply modern merchandising strategies using data-driven decisions to improve sales.
- Evaluate sustainability, ethical production, inclusivity, and fast versus slow fashion preferences.
- Critically analyze textile heritage revival strategies and propose research-based interventions that address cultural, economic, and sustainability challenges.

THEORY
(Credits 3; Hours 45)

UNIT I: Innovation in textile fibres, yarns and fabrics **12 Hours**

This unit deals with apprising students about the technologically advanced textile materials, their production, processing, properties and uses. It discusses recent advancements in both natural and man-made textile fibres including agrowaste-based as well as man-made high-

performance fibres. The unit also details the latest innovations in the manufacture of fabrics. The unit further discusses the textile testing and quality control.

- New Natural and Man-made Textile Fibres: extraction, processing and characterisation
- Developments in textile yarns and their production
- Advancements in Fabric construction methods
- Textile testing and quality control

UNIT II: Recent developments in textile processing 10 Hours

This unit covers the latest innovations in textile wet processing, including advanced pretreatments, sustainable coloration technologies, and functional finishes. Students will explore eco-friendly, technology-driven alternatives such as plasma treatment, supercritical CO_2 dyeing, bio-based finishes, and key global sustainability certifications

- Advances in Pretreatments - Surface functionalisation using Plasma and Enzymatic based pretreatments - desizing, scouring, biopolishing
- Developments in colouration - Dyeing with Supercritical CO2, Ultrasonic waves, digital spray dyeing, digital printing, foam dyeing, dyeing with microbial pigments, dyeing with low water/energy/chemicals, Nano based textile coloration, Certifications like Blue sign, Oekotex, REACH, RSL, ZDHC
- Advances in functional finishes - PFC free water/oil repellant finishes, biobased antimicrobial finishes, UV protective finishes, use of ozone for cleaning/ bleaching, use of laser for vintage effects, bio-based coatings

UNIT III: Recent Developments in Apparel Design and Merchandising. 11 Hours

This unit covers the recent developments and advancements in the area of garment manufacturing and merchandising. It discusses application of CAD/CAM, AI, and digital tools in apparel design and production, alongside contemporary fashion trends, forecasting, and digital marketing. It also addresses modern merchandising strategies, equipping students with a holistic understanding of the evolving fashion industry.

- Implementation of CAD/CAM in apparel design and production: 3D body scanning. pattern design system and cutting system, digital prototyping, AI-driven trend analysis, and e-commerce platforms
- Latest trends in National and International Fashion including forecasting, branding, and digital fashion marketing.
- Modern merchandising strategies and data-driven decision-making to improve customer experience and sales.
- Ethical production, circular fashion, and responsible retail strategies
- Analysis of changing consumer preferences, fast fashion vs. slow fashion, inclusivity, and global fashion influences.

UNIT IV: Textile Heritage Revival and its Conservation **12 Hours**

- Textile Heritage as a System
  - Textile ecosystems: artisans, markets, policy, consumers
  - Cultural vs commercial value
  - Mapping stakeholders in textile traditions
  - Decline & Transformation of Textile Crafts- Industrialization, globalization, and fast fashion
  - Loss of skills and generational shifts, Market disconnect and design stagnation

- Conservation vs Revival
  - Static conservation vs dynamic revival
  - Museum-based vs community-based approaches
  - Ethical concerns (ownership, authenticity, appropriation)

- Models of Revival and Ethics
  - Designer-led revival
  - NGO/community-driven initiatives
  - Government intervention
  - Market-driven revival (luxury, export, niche branding)
  - Intellectual property and artisan rights

TUTORIAL

(Credits 1; Hours 15)

1. Conduct a literature review of any one unconventional natural fibre and one high performance man-made fibre, with respect to its chemistry, properties and uses.
2. Prepare a report on the environmental impact of textile wet processing industry in India and suggest measures required to alleviate these impacts.
3. Conduct an interview with a prominent apparel retail chains to understand its merchandising strategy and the extent of use of AI and data driven decision-making strategies for enhancing efficiency.
4. Create a stakeholder map for one textile cluster
5. Compare two traditional textiles crafts —one declining, one thriving to understand causes of decline and transformation
6. Select a textile tradition and conduct a historical and cultural analysis, current status evaluation, stakeholder mapping and identify key challenges and gaps in revival efforts.

Essential Readings

UNIT I

This unit provides a comprehensive overview of recent developments across the textile production pipeline, from fibre to fabric. Students will explore the extraction, processing, and characterisation of new natural and man-made fibres, alongside advancements in yarn production technologies and structures. The unit further examines innovative fabric

construction methods and concludes with an understanding of textile testing protocols and quality control standards essential for ensuring product performance and compliance in the modern textile industry.

- Basu, A. (Ed.). (2024). Developments in yarn spinning technologies. Woodhead Publishing.
- Jiang, S. X., Seidu, R. K., & Tawiah, B. (Eds.). (2025). *Advances in textile materials and processing techniques for sustainability*. Springer.
- Lawrence, C. A. (Ed.). (2010). Advances in yarn spinning technology. Woodhead Publishing.
- Paul, R., & Gries, T. (Eds.). (2024). Sustainable innovations in the textile industry. Woodhead Publishing.
- Rahman, M. M., Mashud, M., & Rahman, M. M. (Eds.). (2023). Advanced technology in textiles: Fibre to apparel. Springer. https://doi.org/10.1007/978-981-99-2142-3

UNIT II

This unit introduces students to the latest innovations in textile wet processing, covering advanced pretreatments, sustainable coloration technologies, and functional finishes. It explores eco-friendly and technology-driven alternatives to conventional methods, including plasma treatment, supercritical CO_2 dyeing, digital printing, bio-based finishes, and PFC-free repellents. The unit also familiarizes students with key global sustainability certifications and compliance standards relevant to the modern textile industry.

- Mahapatra, N. N. (2018). *Modern textile processing*. Abhishek Publications.
- Cavaco-Paulo, A., & Gübitz, G. M. (Eds.). (2003). *Textile processing with enzymes*. Woodhead Publishing.
- Muthu, S. S. (Ed.). (2018). *Sustainable innovations in textile chemical processes*. Springer.
- Jiang, S. X., Seidu, R. K., & Tawiah, B. (Eds.). (2025). *Advances in textile materials and processing techniques for sustainability*. Springer.
- Biranje, S., Shahid, M., & Adivarekar, R. V. (Eds.). (2025). *Sustainable finishing techniques in textiles*. Springer.
- Shahid, M., Biranje, S., Yusuf, M., & Adivarekar, R. V. (Eds.). (2025). *Advancements in textile finishing: Techniques, technologies, and trends*. Springer.

UNIT III

This unit explores the integration of modern technology and contemporary trends in apparel design, production, and retail, covering CAD/CAM systems, 3D body scanning, digital prototyping, and AI-driven tools. Students will examine national and international fashion trends, forecasting, branding, and digital marketing strategies alongside modern merchandising and data-driven decision-making. The unit also addresses ethical production, circular fashion, and evolving consumer preferences, preparing students to navigate the dynamic and responsible future of the fashion industry.

- Diamond, J., & Diamond, E. (2013). *Fashion retailing: A multi-channel approach*. Boston: Pearson
- Fletcher, K. (2014). *Sustainable fashion and textiles: Design journeys*. London: Routledge.
- Jamal, Z., & Arya, N. (2024). *Fashion merchandising: An introduction*. New Delhi: Redgrab Books Pvt. Ltd.
- Smith, S. S. (2013). *CAD for fashion design and merchandising*. New York: Fairchild Books

UNIT IV

- Crill, R. (2015). The fabric of India. Victoria and Albert Museum.
- Dhamija, J. (2002). Textile traditions of India. Har-Anand Publications.
- Ranjan, A., & Ranjan, M. P. (2007). Handmade in India: Crafts of India. National Institute of Design.
- Weiner, A. B., & Schneider, J. (Eds.). (1989). Cloth and human experience. Smithsonian Institution Press.
- India Craft Foundation. (n.d.). Textile and craft documentation. https://www.indiacraftfoundation.org
- Dastkari Haat Samiti. (n.d.). Craft revival and artisan initiatives. https://www.dastkarihaat.org
- Google Arts & Culture. (n.d.). Textiles and craft traditions. https://artsandculture.google.com

Suggested Readings

- Akter, R., Sarker, T. R., Murad, S., & Shaikh, E. (2023). Investigating the effect of fabric design on properties of different weft knit fabrics.
- Muthu, S. S. (Ed.). (2017). *Detox fashion: Sustainable chemistry and wet processing*. Springer.
- Rahaman, M. T. (2026). Advancements in natural fibers for sustainable textile manufacturing: Importance, sources, applications, and future prospects.
- Shahid, M., & Adivarekar, R. V. (Eds.). (2020). *Advances in functional finishing of textiles*. Springer.
- Textile industry and Trade Journal Goregaon (W), Mumbai
- Development Commissioner (Handlooms). (n.d.). Annual reports and handloom sector studies. Government of India.
- UNESCO. (2003). Convention for the safeguarding of the intangible cultural heritage. UNESCO Publishing.
- Crafts Council of India. (n.d.). Reports and publications on Indian crafts.

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

Discipline Specific Elective Courses

DISCIPLINE SPECIFIC ELECTIVE COURSE
TEXTILE DESIGN DEVELOPMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Textile Design Development	4	1	0	3	As per admission criteria	Nil

Learning Objectives

- To develop an understanding of design elements, principles, forecasting, trend analysis, and design thinking for textile design development.
- To enhance observational and rendering skills through nature drawing, object drawing and motif development.
- To enable students to translate concepts into practical outputs such as motifs, pattern repeats, colour ways and digital textile layouts.
- To build competency in both vector and raster software for digital drawing, motif refinement, seamless repeat creation and product mock-up development.
- To encourage problem-solving, creativity and user-centered thinking by integrating design thinking with hands-on textile product development.

Learning Outcomes

The students would be able to:

- Apply elements and principles of design, forecasting concepts, trend types and design thinking stages in their practical work.
- Create detailed nature and object drawing, rendering and motif variations based on observation and analysis.
- Digitally refine motifs using vector and raster software and convert them into seamless pattern repeats and multiple colour ways.
- Interpret trend and forecast data for colour selection, motif direction and product styling.
- Apply digitally developed patterns to create various textile products.

THEORY

(Credit 1; Hours 15)

UNIT I: Elements and Principles of Design 6 Hours

This unit introduces the elements and principles guiding textile composition. It covers also covers techniques of visual layout and its composition.

- Elements of Design: Line, Colour, Texture, Shape, Form and Space
- Principles of Design: Balance, Rhythm, Proportion, Emphasis, Harmony and Unity
- Visual composition and design thinking basics

UNIT II: Design Context and Application 9 Hours

This unit provides an overview of forecasting and textile trends and discusses major art movements. The unit also details the design thinking process and the development of mood boards and theme boards to visually communicate trend directions and design concepts.

- Trends and Forecasting: Micro, Macro, Fad, Classic, Seasonal
- Major art movements and their textile applications: Renaissance, Baroque, Neoclassicism, Romanticism, Realism, Art Nouveau, Art Deco, Cubism, Futurism, Abstract Expressionism and Pop Art
- Design Thinking Process: Empathize, Define, Ideate, Prototype and Test
- Development of mood boards and theme boards

PRACTICAL

(Credits 3; 90 hours)

1. Nature drawing, object drawing and rendering
2. Development of motif- woven and surface design
3. Forms of motif- Natural, stylized, simplified, geometrical, abstract
4. Vector Based softwares- Coreldraw/Inkscape/any open source software
5. Raster Based softwares- Photoshop/Photopea/any open source software
6. Brain storming, moodboard and theme board
7. Design repeats and colour ways
8. Digital development of seamless patterns
9. Application of digitally developed patterns and repeats to various textile products
10. Design Project: Product development using self created digital patterns*

**Design project should integrate design principles, processes and design thinking to develop a textile design, showcasing skills in design development and execution*.

Essential Readings

UNIT I

This unit introduces the basic elements and principles that form the foundation of textile design. It covers the elements of design—line, colour, texture, shape, form, and space—and explains their role in creating effective textile compositions. The principles of design, including balance, rhythm, proportion, emphasis, harmony, and unity, are discussed in relation to visual organization and layout. The unit also highlights visual composition techniques and distinguishes between the functional and decorative aspects of textile design.

- Brommer, G. F. (2000). *Elements and principles of design: Student guide with activities (Art appreciation ser.)*. Crystal Productions.Lauer, D. A., & Pentak, S. (2012). Design Basics. Cengage Learning.
- Lester, J. (2013). *Visual Research: An Introduction to Research Methodologies in Graphic Design*. Bloomsbury.
- Wong, W. (1993). *Principles of Form and Design.* John Wiley & Sons.
- Zelanski, P., & Fisher, M. P. (2011). *Design Principles and Problems.* Cengage Learning.

UNIT II

This unit introduces the concept of forecasting and its importance in textile and fashion design and explains different types of trends such as micro, macro, fad, classic, and seasonal trends. This unit also provides an overview of major art movements and their influence on design, highlighting the evolution of artistic styles, themes, and techniques across different periods. The unit also focuses on the development of mood boards and theme boards as visual tools to communicate trend directions and design concepts.

- Ambrose, G., & Harris, P. (2011). *Design Thinking*. AVA Publishing.
- Arnason, H. H., & Mansfield, E. C. (2013). *History of Modern Art.* Pearson.
- Bhardwaj, V., & Fairhurst, A. (2021). *Fast Fashion, Sustainability, and the Ethical Appeal of Luxury Brands*. Routledge.
- Brannon, E. L. (2011). *Fashion Forecasting.* Fairchild Books.
- Brown, T. (2009). *Change by Design.* Harper Business.
- Gombrich, E. H. (2006). *The Story of Art.* Phaidon Press.
- Holland, G., & Jones, R. (2017). *Fashion Trend Forecasting*. Laurence King Publishing.
- Honour, H., & Fleming, J. (2009). *A World History of Art.* Laurence King Publishing.
- Jackson, T., & Shaw, D. (2009). *Mastering Fashion Marketing.* Palgrave Macmillan.
- Kaul, M. (1961/Updated Editions). *Trends in Indian Painting: Ancient, Medieval, Modern*. Dhoomimal Ramchand. (Classic Indian text).
- Kelley, T., & Kelley, D. (2013). *Creative Confidence: Unleashing the Creative Potential Within Us All.* Crown Business.

- Liedtka, J., & Ogilvie, T. (2011). *Designing for Growth: A Design Thinking Tool Kit for Managers.* Columbia University Press.
- Naik, Shailaja D. (2010). *CAD in Clothing and Textiles*. New Age International Publishers.
- Plattner, H., Meinel, C., & Leifer, L. (2011). *Design Thinking: Understand – Improve – Apply.* Springer.
- Prakash, V. (2020). O*ne Continuous Line: Art, Architecture and Urbanism of Aditya Prakash.* Mapin Publishing. (Indian context; relevant art/design)
- Raymond, M. (2010). T*he Trend Forecaster's Handbook.* Laurence King Publishing.
- Singh, R. (2023). *Fashion Forecasting and Trend Analysis.* Bloomsbury India. (Indian publication; recent)
- Wilson, J. A. (2001). *A Handbook of Textile Design; Principle, Process and Practice.* (1 ed.) Woodhead Publishing.

Suggested Readings

- Frings, G. S. (2007). *Fashion: From Concept to Consumer* (9th ed.). Prentice Hall.
- Fiell, C., & Fiell, P. (2002). *Graphic Design for the 21st Century*. Taschen.
- Bonnici, A. (2019). *Textile Design Theory in Practice*. Bloomsbury.
- *Eckert, Claudia & McFadden, Margaret (2010). Computer-Aided Design for Fashion and Textiles. Woodhead Publishing.*
- Forecasting Websites- WGSN – *https://www.wgsn.com,* Fashion Snoops – *https://www.fashionsnoops.com,* Pantone Color Institute – *https://www.pantone.com,*
- Softwares- Adobe Photoshop / Illustrator – *https://www.adobe.com,* CorelDRAW Graphics Suite – *https://www.coreldraw.com,* Inkscape – *https://inkscape.org,* Photopea– *https://www.photopea.com*

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

GLOBAL COUTURE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Global Couture	**4**	**3**	**1**	**0**	**As per admission criteria**	**Nil**

Learning Objectives

- Understand the evolution and structure of global couture and fashion systems across regions.
- Analyse global fashion markets, value chains, and trade policies that shape international apparel. flows.
- Evaluate the creative, cultural and organisational dynamics of iconic and emerging couture houses and designers.
- Examine contemporary issues in couture, including identity, inclusivity, technology, sustainability and ethics.
- Apply global fashion forecasting tools and trend intelligence to conceptualise couture-oriented design directions.

Learning Outcomes

- Explain major transformations in global couture and identify the role of established and emerging fashion capitals.
- Interpret global sourcing patterns, production geographics, and the impact of WTO and free-trade agreements on fashion markets.
- Critically compare global designers and couture houses, recognising their creative leadership and evolving narratives.
- Analyse how culture, identity, technology, and sustainability concerns shape contemporary couture practices.
- Use forecasting principles and trend platforms to generate trend-based couture concepts supported.

THEORY
(Credits 3; Hours 45)

UNIT I: Global Fashion Systems & Couture Dynamics 12 Hours

This unit introduces the evolution of global couture and the functioning of international fashion systems. It covers global value chains, trade agreements and the significance of fashion capitals.

- Evolution of global couture
- International fashion markets and global value chains.
- Shifting production geographics, Offshore sourcing and low-cost manufacturing countries.
- WTO and free trade agreements on global apparel trade
- Established fashion capitals: Paris, Milan, New York, London, Tokyo
- Emerging global fashion cities: Seoul, Shanghai, Dubai, Copenhagen, Johannesburg.

UNIT II: Global Designers and Couture Houses 12 Hours

This unit explores iconic global designers, the development of couture houses and the role of creative leadership. It also examines emerging designers and India's evolving couture ecosystem.

- Iconic global designers: European, American, Japanese, and Asian
- Evolution of couture houses
- Role of creative leadership
- Emerging international designers and new couture narratives
- Indian couture ecosystem: leading and contemporary couturier

UNIT III: Culture, Identity & Contemporary Issues in Couture 11 Hours

This unit examines how culture, identity and contemporary socio-environmental issues shape global couture. It includes inclusivity, technology-driven couture, sustainability and ethical practices.

- Culture, heritage and identity in global couture.
- Gender-neutral and inclusive couture design
- Technology-driven couture: digital fashion, virtual design and AI.
- Sustainability and environmental challenges in fashion
- Ethical and fair-trade practices

UNIT IV: Global Fashion Forecasting & Trend Intelligence 10 Hours

This unit provides the fundamentals of forecasting and trend using global trend platforms. It focuses on analysing macro/micro trends and translating them into couture concepts.

- Fundamentals of forecasting and trend theory
- Macro, micro, and seasonal trend development.
- Global trend intelligence platforms: WGSN, Trend Union, Fashion Snoops
- Direction-setting: colours, materials, silhouettes and details.
- Trend interpretation and translation into conceptual couture designs

TUTORIAL

(Credits 1; Hours 15)

Visits to haute-couture stores/ production houses and social media platforms. Presentations and projects would be the outcome

1. Technical analysis of works of iconic fashion designers
   Discussion - Trends, elements of design, raw material analysis, constructional analysis
   Class Activity - Secondary data collection of designer's collection and store visits
2. Interpretation of Fashion trends
   Discussion - Identify patterns, social and cultural context, as well as life cycle tracking
   Class Activity - Online information collection and class presentation
3. Use of technology and bioscience in fashion
   Discussion- Use of smart textiles, new generation fibres, recycled fibres, phase change materials etc
   Class Activity - Review and present/ report any designer collection
4. Analysis of designer collections inspired by traditional textile arts
   Discussion- Review of heritage collections on the ramp
   Class Activity - Review and present/ report any designer collection

Essential readings

UNIT 1

This unit introduces the dynamics of fashion movement in the international markets as well as in the production centres. It deals with the technical competencies of low-cost producing countries and how they have become the epitome of production for labour-intensive products, such as garments. It further elaborates on the evolution of historically eminent fashion capitals, as well as the relatively new fashion centres, their characteristic features, and comparative advantages.

- Breward, C., & Gilbert, D. (Eds.). (2006). *Fashion's world cities.* Berg Publishers.
- Fringes G.S. (2007). *Fashion from Concept to Consumer*, 9th edition, Prentice Hall, New Jersey.
- Stone, E. (2013). *The dynamics of fashion (4th ed.)*. Bloomsbury Publishing India.

UNIT II

The proliferation of infrastructural support and creativity to interpret fashion trends has led to the conceptualisation, creation and showcase of landmark collections by various designers across the globe. Iconic designers are known for their unique-selling-proposition, and have built fashion identity which has changed the face of fashion in the socio-cultural context. Together with the team of stylist, merchandisers, and production workforce, many couture houses have developed their collections periodically in systematic fashion seasons. This unit elaborates on the discussion of various couture houses in India as well as internationally.

- Jani, A, Khosla, S. (2000) *India Fantastique Fashion.* Thames and Hudson Publication

- Palomo-Lovinski, N. (2010). *The world's most influential fashion designers: Hidden connections and lasting legacies of fashion's iconic creators.* Barrons Educational Series Inc.
- Troy, N. J. (2002). *Couture culture: A study in modern art and fashion.* MIT Press.

UNIT III

The shaping of fashion as a product is driven by the new age variables which depend on the demographic and technological changes in the marketing environment. There is a distinct shift in consumer behaviour and technological life cycle which are addressed by the designers in order to target a niche in design. These could be "design for inclusivity" or "design for gender neutrality". As climate change and sustainability issues are increasingly gaining momentum, couturiers are further classified and identified with "minimalistic fashion", "ethical fashion" and "sustainable fashion".

- Bowles, H. (2023). I*ndia in fashion- The impact of Indian dress and textiles on the fashionable imagination. NMACC, India*. Rizzoli International Publications
- https://www.lakmefashionweek.co.in/home/sustainability
- https://www.theartsfamily.com/artists/kallol-datta

UNIT IV

The attributes of fashion from acceptance to rejection, are governed by trends which are predicted in a scientific manner by social scientists. They capture the nuances of society and industry in a qualitative as well as quantitative manner and showcase the elements of design in the form of "Trends" which dictate design development. This unit deals with the trajectory of trends, their interpretation for individualistic mood boards and product design. It elaborates on various international agencies 'forecasts, which are followed by the fashion fraternity – textile and fashion designers, producers, visual merchandisers and stylists.

- Holland, G., & Jones, R. (2017). *Fashion trend forecasting.* Laurence King Publishing.
- Kim Eundeok, Fiore A. M. & Hyejeong Kim (2021). *Fashion Trends, 2nd Ed.* Bloomsbury Publication
- https://heuritech.com/fashion-trends-2026/

Suggested Readings

- Barnard, M. (Ed.). (2007). *Fashion theory: A reader.* Routledge.
- Barthes, R. (2006). *The language of fashion (A. Stafford, Trans.).* Bloomsbury.
- Brannon, E. L. (2010). *Fashion forecasting (3rd ed.).* Fairchild Books/Bloomsbury.
- Bowles, H. (2011). *The world of couture.* Abrams.
- R. Andrew, (2018) *Key Concepts for the Fashion Industry*, Bloomsbury Publishing, India.
- Right E. B. (2022). *Vintage Fashion: Collecting and Wearing Designer Classics.* Welbeck Publishing.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

FASHION MARKETING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Fashion Marketing	**4**	**3**	**0**	**1**	**As per admission criteria**	Nil

Learning Objectives

- To understand the foundational concepts, scope, and significance of fashion marketing in a dynamic market environment.
- To analyze consumer behaviour, market segmentation, targeting strategies, and fashion-specific buying patterns.
- To apply principles of product planning, branding, positioning, and differentiation to fashion products.
- To evaluate pricing strategies and their suitability for diverse product categories and life-cycle stages in the fashion industry.
- To create integrated marketing communication plans using traditional, digital, and influencer-driven promotional tools tailored for fashion brands.
- To develop customer-driven marketing mix strategies and utilize analytical and technological tools to assess digital marketing, e-commerce models, and emerging trends.

Learning Outcomes

Students will be able to:

- Define and explain the key concepts of fashion marketing, market environment, and consumer behaviour.
- Comprehend various consumer behaviour determinants, segmentation bases, and targeting approaches relevant to fashion markets.
- Apply product planning concepts, including product mix, product life cycle strategies, positioning, brand elements and branding strategies to real-world fashion scenarios.
- Evaluate new-product pricing, product-mix pricing, and pricing adjustment strategies appropriate for fashion products.
- Design and assess integrated marketing communication (IMC) strategies incorporating advertising, digital media, influencers, stylists, and content creators as well as digital marketing tools.

THEORY

(Credits 3; 45 Hours)

UNIT I: Understanding Marketing Management and Consumer Behaviour 12 Hours

This unit introduces the fundamentals of marketing environment, segmentation, and targeting. It covers key consumer behaviour concepts and the buying decision process.

- Importance and scope of Marketing
- Analysing marketing environment
- Market segmentation and targeting
- Consumer Behaviour Analysis
- Factor Influencing consumer Behaviour
- Type of buying decision behaviour
- Buying decision process

UNIT II: Product Planning and Branding 13 Hours

This unit explores product mix, product life cycle, and differentiation strategies and introduces branding elements and strategies used by fashion brands.

- Product line, Product mix and Product classification
- Product life cycle and strategies
- Product positioning and Differentiation strategies
- Brand elements-tangible, intangible
- Branding Strategies

UNIT III: Pricing 8 Hours

This unit covers essential pricing strategies for new and existing products, product mix pricing and price adjustment strategies in the fashion market.

- New Product Pricing strategies
- Product mix pricing strategies
- Pricing adjustment strategies

UNIT IV: Marketing Communication and Promotion 12 Hours

This unit presents integrated marketing communication and promotion techniques and also focuses on digital marketing for fashion brands.

- Integrated marketing communication strategy

- Development and managing advertising programs
- Sales promotion and Personal selling
- Marketing in the digital world

  – Concept and features
  – Key digital channels: Content and Email marketing, Social media marketing for fashion brands
  – Role of influencers

PRACTICAL
(Credit 1; Hours 30)

1. Analysis of Demographics of Indian market
2. Lifestyle segmentation (VALS) in fashion industry
3. Idea generation for a new product
4. Brand study

   – Tangible and Intangible elements
   – Brand Portfolio
   – Brand Positioning and Differentiation

5. Review product pages from leading e-commerce platforms with respect to Fabric specifications, Fit guides and sizing tools, High-resolution imagery and videos, User-generated reviews
6. Analysis of AI shopping assistants in E-commerce

Essential Readings

UNIT I:

This unit provides an overview of marketing management principles with specific reference to the fashion sector. It familiarizes students with the scope and relevance of marketing and examines how internal and external environmental factors influence marketing decisions. The unit also introduces market segmentation and targeting approaches. The unit also gives in-depth insight into consumer behaviour, exploring various factors influencing consumers, along with different buying decision patterns and stages, enabling learners develop the ability to analyze consumer behaviour.

- Babu, Ramesh V., Arunraj A. (2025) *Fashion Marketing Management: WPI* (chapter 1-2)
- Schiffman, L. G. & Wisenbilt, J. (2019) Consumer Behaviour 12th Ed.: Pearson
- Easy, M. (2020) *Fashion Marketing* (4th Edition, chapter 1-5) Wiley-Blackwell

- Jackson, T., & Shaw, D. (2009) *Mastering Fashion Marketing*: Palgrave Macmillan (chapter 1-3)
- Kotler, P., Keller, Chernev, A., Sheth Jagdish N., Shainesh G. (2025) *Marketing Management (*17h*ed.*, chapters 1-4, 6) Pearson.
- Posner, H. (2021) *Marketing Fashion: Strategy, branding and promotion* (3rd Ed. Chapter 1,2,4) Laurence King Publishing

UNIT II:

This unit examines the strategic planning and management of fashion products and brands. It introduces key concepts related to product lines, product mix, and product categorization, along with an analysis of product life cycle stages and associated strategies. The unit highlights the importance of positioning and differentiation in creating market distinction. It further explores branding by identifying both tangible and intangible brand elements and reviews various branding approaches used by fashion organizations to establish identity, credibility, and customer loyalty.

- Babu, Ramesh V., Arunraj A. (2025) *Fashion Marketing Management*: WPI (chapter 3)
- Easy, M. (2020) *Fashion Marketing* (4th Edition, chaps 5-6) Wiley-Blackwell
- Jackson, T., & Shaw, D. (2009) *Mastering Fashion Marketing*: Palgrave Macmillan (chapter 3, 4, 8)
- Kotler, P., Keller, Chernev, A., Sheth Jagdish N., Shainesh G. (2025) *Marketing Management* (17h*ed.*, chaps7-11) Pearson.
- Posner, H. (2021) *Marketing Fashion: Strategy, branding and promotion* (3rd Ed., chap 5) Laurence King Publishing

UNIT III:

This unit focuses on pricing decisions as a vital component of fashion marketing strategy. It addresses pricing approaches adopted for new product launches as well as for existing product lines. The unit also discusses product mix pricing and different pricing adjustment methods employed to suit changing market demands and consumer segments. Through this study, students gain insight into how pricing influences consumer perception, market competitiveness, and overall brand performance.

- Easy, M. (2020) *Fashion Marketing* (4th Edition, chapter 7) Wiley-Blackwell
- Jackson, T., & Shaw, D. (2009) *Mastering Fashion Marketing*: Palgrave Macmillan (chapter 5)
- Kotler, P., Keller, Chernev, A., Sheth Jagdish N., Shainesh G. (2025) *Marketing Management* (17h*ed.*, chapter 12) Pearson.
- Babu, Ramesh V., Arunraj A. (2025) *Fashion Marketing Management: WPI* (chapter 8)

UNIT IV:

This unit explores the role of communication and promotional activities in building and sustaining fashion brands. It introduces the concept of integrated marketing communication and examines the planning and execution of advertising programs. The unit also covers sales

promotion techniques and personal selling practices. Additionally, it emphasizes the growing importance of digital marketing, outlining its key characteristics and major digital channels such as content marketing, email marketing, and social media platforms. The influence of digital opinion leaders and influencers on fashion consumers is also analyzed.

- Belch, E. G. and Belch, A.M. (2003). Advertising and Promotion- An integrated marketing communications perspective 6th Ed.: Tata McGraw-Hill publishing company ltd
- Easy, M. (2020) *Fashion Marketing* (4th edition, chap 9) Wiley-Blackwell
- Barker, M., Barker, D., Bormann, N., & Neher, K., (2017) *Social Media Marketing*: A strategic approach 3rd Ed. : Cengage Learning India Pvt. Ltd
- Jackson, T., & Shaw, D. (2009) *Mastering Fashion Marketing*: Palgrave Macmillan (chap 6)
- Kotler, P., Keller, Chernev, A., Sheth Jagdish N., Shainesh G. (2025) *Marketing Management* (17h edition, chaps13-17) Pearson.
- Posner, H. (2021) *Marketing Fashion: Strategy, branding and promotion* 3rd Ed.: Laurence King Publishing (chap 6)

Suggested Readings

- Chaffey, D., & Ellis-Chadwick, F. (2019) *Digital Marketing* 7th Ed.: Pearson
- Sachdeva, Nidhi. (2018) *Fashion: Marketing, Merchandising and Buying.* Heritage Publishers
- Diamond, J., Diamond, E. and Litt, S.D. (2006) *Fashion Retailing- A Multi- Channel Approach*: Bloomsbury Publishing Inc.
- Jackson, T., & Shaw, D. (2001) *Fashion Retail* : Palgrave Macmillan
- Jain, J.N. and Singh, P.P. (2007) *Modern Marketing Management- Principles and Techniques*. New Delhi: Regal Publications.
- Poloian, G.L.(2009). Multichannel Retailing : Fairchild Books-New York.
- Posner, H. (2015) Fashion buying 3rd Ed. : Wiley

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
ADVANCED GARMENT CONSTRUCTION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Advanced Garment Construction	4	2	0	2	As per admission criteria	Introductory Course in Garment Design and Construction

Learning Objectives

- To understand terminology, tools, dress forms, and fabric selection for draping.
- To apply draping principles and processes to develop accurate balanced patterns.
- To develop advanced patterns for bodice, skirt, and sleeve variations and apply fundamentals of grading.
- To identify and handle specialty fabrics with appropriate seams and finishes.

Learning Outcomes

The students would be able to:

- Demonstrate proficiency in using dress forms and draping tools.
- Drape and develop balanced draped basic patterns and their variations.
- Construct style variations for bodice, skirt, and sleeve designs and apply basic grading techniques.
- Handle specialty fabrics effectively and apply appropriate seam and finishing techniques.

THEORY

(Credits 2; Hours 30)

UNIT I: The Dress Form, Tools and Draping Terminology **4 Hours**

This unit introduces draping terminology, tools, materials and different dress forms. The unit also emphasizes impact of fabric characteristics and grain direction on the fall and balance of a garment.

- Draping terminology, tools, and essential supplies
- The dress form and specialty forms: types and uses
- Fabric selection considerations: hand, appearance, texture, weight

- Understanding grainlines (lengthwise, cross-grain, bias)

UNIT II: Draping Principles and Process **5 Hours**

This unit focuses on the principles and skills of draping; step by step draping process for achieving balanced and accurate patterns. The unit also highlights identification of design details, fabric planning, and innovative zero-waste draping strategies.

- Fundamentals of draping: principles and skills
- Identification of design details; fabric calculation and preparation
- Draping process, marking, trueing, blending seam lines, adding seam allowances
- Principles of balanced patterns
- Zero-waste draping approaches

UNIT III: Advanced Pattern Development and Grading **12 Hours**

This unit focuses on advanced pattern development for creating complex bodice, skirt, and sleeve variations. It also introduces the fundamentals of grading.

- Bodice- Surplice (wrap), off-shoulder, halter, cowls and strapless princess foundation
- Skirts- Pegged skirt with pleats and skirt with godets
- Sleeves- Sleeves with extended cap, wedding sleeve, kimono, raglan and drop shoulder
- Grading- terminology, methods and types of grading

UNIT IV: Handling Specialty Fabrics and Seam Variations **9 Hours**

This unit introduces handling specialty fabrics, addressing challenges in cutting, stitching, finishing, and selecting suitable seam variations for effective construction.

- Specialty Fabrics
    - Furs and feathers
    - Stretch fabrics and knits
    - Sheer and open weave
    - Laces and nets
    - Napped and pile
    - Occasional wear fabrics
- Seam variations and their applications

PRACTICAL

(Credits 2; 60 hours)

1. Draping the basic bodice and developing bodice style variations

2. Draping the basic skirt block and creating skirt style variations (with pleats, flare, yokes, panels, circularity, wraps, asymmetry)

3. Manual grading of a basic bodice and skirt pattern

4. Preparation of a specialty-fabric swatch book (handling precautions, appropriate needle and thread, seam type and finishing methods)

5. Construction of seam variation samples

Essential Readings

UNIT I

This unit introduces the fundamentals of draping, focusing on basic draping terminology, tools, and essential supplies used in garment construction. Students learn about different types of dress forms, including standard and specialty forms, and their appropriate uses. The unit highlights the importance of fabric selection by examining characteristics such as hand, appearance, texture, and weight, and how these affect the fall and balance of garments. It also provides an understanding of grainlines—lengthwise, cross-grain, and bias—and their role in garment fit, structure, and overall drape.

- Amaden-Crawford, C. (2018). *The art of fashion draping* (5th ed., chaps. 1–2). Fairchild Books.
- Jaffe, H., & Relis, N. (2011). *Draping for fashion design* (5th ed., chaps. 1–2). Pearson Education.
- Joseph-Armstrong, H., & Ashdown, S. P. (2022). *Draping for apparel design* (4th ed., chaps. 1–3). Bloomsbury Publishing.
- Kiisel, K. (2020). *Draping: The complete course* (2nd ed., unit 1). Laurence King Publishing.
- Paul, D., & Verreos, N. (2024). *The fundamentals of fashion draping*. Nikolaki, Inc. ISBN 9780999454343.

UNIT II

This unit develops an understanding of the core principles and skills required for effective draping. It guides students through the step-by-step draping process to achieve accurate, well-balanced patterns. Emphasis is placed on identifying design details, planning fabric requirements, and preparing materials before draping. Students learn essential processes such as marking, trueing, blending seam lines, and adding seam allowances to convert draped muslin into usable patterns. The unit also introduces principles of balanced pattern development and explores innovative zero-waste draping approaches, encouraging efficient fabric use and sustainable design thinking.

- Amaden-Crawford, C. (2018). *The art of fashion draping* (5th ed., chaps. 1–5). Fairchild Books.

- Helmersson, B. (2023). *Zero waste patterns*. Quadrille Publishing.
- Joseph-Armstrong, H., & Ashdown, S. P. (2022). *Draping for apparel design* (4th ed., chaps. 4–9). Bloomsbury Publishing.
- Kiisel, K. (2020). *Draping: The complete course* (2nd ed., units 1–3). Laurence King Publishing.
- Rissanen, T., & McQuillan, H. (2023). *Zero waste fashion design* (2nd ed., chaps. 2–5: Zero-waste design methods and fabric planning). Bloomsbury Visual Arts.

UNIT III

This unit focuses on advanced pattern development techniques for creating complex garment styles. Students learn to develop and modify bodice patterns such as surplice (wrap), off-shoulder, halter, cowl, and strapless princess foundations with emphasis on fit and structure. The unit also covers skirt variations including pegged skirts with pleats and skirts with godets, highlighting volume and movement. Advanced sleeve designs such as extended cap, wedding, kimono, raglan, and drop-shoulder sleeves are explored. Additionally, the unit introduces grading fundamentals, including basic terminology, methods, and types used for size adaptation and production.

- Handford, J. (2015). *Pattern grading for women's, men's, and children's apparel*. Wiley.
- Joseph-Armstrong, H. (2021). *Patternmaking for fashion design* (5th ed., chaps. 4–6, 13–15, 19). Pearson Education.
- Mullet, K. K. (2018). *Concepts of pattern grading*. Fairchild Books.
- Parish, P. (2020). *Pattern cutting: The architecture of fashion*. Bloomsbury Publishing.

UNIT IV

This unit introduces techniques for handling specialty fabrics, including furs, feathers, stretch fabrics, knits, sheer and open weaves, laces, nets, napped and pile fabrics, and occasional wear textiles. It addresses challenges in cutting, stitching, and finishing these materials. Emphasis is placed on understanding fabric behaviour and selecting suitable seam variations to ensure proper construction, durability, flexibility, and aesthetic appeal in garments made from specialty fabrics.

- Amaden-Crawford, C. (2023). *A guide to fashion sewing* (7th ed.). Bloomsbury Publishing.
- Amaden-Crawford, C. (2024). *Fashion sewing: Advanced techniques*. Fairchild Books.
- Baugh, G. (2019). *The fashion designer's textile directory: A guide to fabrics' properties, characteristics, and garment-design potential*. Bloomsbury Publishing.
- Czachor, S. (2019). *Sewing with knits and stretch fabrics*. Fairchild Books.
- Shaeffer, C. (2014). *Sewing for the apparel industry*. Pearson Education.
- Shaeffer, C. (2008). *Fabric Sewing Guide*. Krause Publications. Cincinnati

Suggested Readings

- Almond, K. (2017). *Basics Fashion Design: Draping*. Bloomsbury Publishing.

- Amaden-Crawford, C. (2015). *Guide to Fashion Sewing* (6th ed.). Fairchild Books.
- Brown, P., & Rice, J. (2014). *Ready to wear apparel analysis* (4th ed.). Pearson Education. New Delhi
- Glock, R. E., & Kunz, G. I. (2014). *Apparel Manufacturing: Sewn Product Analysis* (5th ed.). Pearson.
- Keiser, S. J., & Garner, M. B. (2012). *Beyond Design: The Synergy of Apparel Product Development.* Fairchild Books.
- Mehta, R. (2015). *Practical Pattern Making*. CBS Publishers.
- Smith, K. (2012). *Sewing Techniques and Finishes*. Barron's.
- Udale, J. (2014). *Creative Draping*. Laurence King Publishing.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
ADVANCED FABRIC SCIENCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Advanced Fabric Science	4	3	1	0	As per admission criteria	Nil

Learning Objectives

- To provide students with the knowledge of the structure, production and properties of natural and synthetic fibres.
- To familiarize them with the various yarn and fabric production techniques.
- To learn about the various standards, quality marks and labels in textiles and to understand the process of assurance of quality in textiles.

Learning Outcomes

Students will be able to:

- Understand the structure and production techniques of various natural and manmade fibers and their physical properties.
- Identify and explain the various conventional and non-conventional techniques of yarn spinning.
- Demonstrate an understanding of various types of fabric forming methods.
- Gain knowledge about quality parameters for fibre, yarn and fabrics.

THEORY

(Credits 3; Hours 45)

UNIT I: Textile Fibres **18 Hours**

In this unit, the students will learn about the chemical composition, morphology, chemical and physical properties of selected textile fibres.

- Natural fibers- Cotton, Flax, Silk, Wool
- Man-made fibers- Rayon, Acetate, Nylons, Polyester, Acrylic, Modacrylic, Olefins, Aramids, Elastomeric, Carbon fiber, Glass fiber.
- Physical properties of textile fibre and their relationship to the polymer structure: Tensile, Moisture, Thermal, Optical and Electrical Properties

UNIT II: Yarn Manufacturing **8 Hours**

This unit will discuss various yarn production techniques and yarn characteristics.

- Conventional and non-conventional spinning methods
- Yarn properties and their implications on quality: Fineness, Evenness, Yarn count, Yarn crimp, Yarn twist
- Yarn Texturisation- Purpose and Methods of Texturisation

Unit III: Weaving **9 Hours**

This unit will elaborate on the production of woven fabrics and the detailed working of a loom.

- Weaving
    - Weaving operations
        - Yarn preparation for weaving
        - Shedding- Tappet, Dobby, Jacquard shedding mechanisms
        - Picking mechanisms
        - Beat-up mechanisms
        - Secondary and auxiliary loom motions
    - Types of Looms – Shuttle and Shuttle-less
    - Design interpretation and representation- draft and peg plan
- Complex woven constructions: Triaxial, Multiaxial Fabrics etc.

UNIT IV: Knitting, Non-wovens and Other Fabric Construction Techniques **10 Hours**

In this unit, the students will learn fabric production through other significant fabric productions methods such as knitting, non-wovens etc.

- Knitting
    - Basics of Knitting- Terminology, Types of stitches
    - Knitting machines
    - Types of Knitted fabric and their properties: Warp and Weft knits Knitwear production techniques
- Non-woven
    - Production of non-woven
    - Types of non-woven fabrics and their properties
- Other techniques of Fabric production
    - Laces
    - Nets
    - Fibre reinforced composites

TUTORIAL

(Credits 1; Hours 15)

1. Comparison between Woven, Knitted and Non-Woven Fabrics

Discussion: Differentiation between various types of fabric in terms of properties and prices
Activity: Visits to stores/ markets to procure samples for recognition and differentiation

2. Spinning, weaving and knitting

Discussion: Processes and machinery being used for these units
Activity: Plan visits to the units to understand the processes and machinery being used. Students will make a detailed report of the units visited.

3. Woven Design interpretation and representation

Discussion: Making of Draft plans and peg plan to be explained
Activity: Students to prepare weave plan, draft and lifting plan for various woven fabric samples

4. Knitwear Production

Discussion: Various types of knitted fabrics and knitwear production techniques
Activity: Students to carry out a market survey of various different types of knitted fabrics and identify various knitwear production methods.

5. Non-woven fabrics

Discussion: Types of non-woven fabrics, their properties and end use
Activity: Market survey of various types of non-woven and their area of application

6. Nets and Laces

Discussion: Types of laces and nets
Activity: Market survey of various types of laces and nets and a building a swatch file

Essential Readings:

UNIT I
This unit introduces students to natural and man-made fibres, explaining their sources, structure, production techniques and basic characteristics. It will also help the students understand various pphysical properties of textile fibres such as tensile, moisture, thermal, optical and electrical and their relationship to the polymer structure.

- Rastogi, D. and Chopra, S. (Ed) (2017) *Textile Science*, India: Orient Black Swan Publishing Limited. Chapters 1-3.
- Saville, B.P. (2000) Physical Testing of Textiles, Textiles Institute
- Gohl, E. P. G. and Vilensky, L. D. (1983) *Textile science*. Melbourne: Longman Cheshire. Chapters 1-5.
- Sekhri S. (2016) *Textbook of Fabric Science: Fundamentals to Finishing*, 2E, Delhi: PHI Learning Private Ltd. Chapters 1-8.

UNIT II
This unit will introduce various conventional and non-conventional methods of yarn production. Students will also learn about the yarn properties and their implications on quality. The unit will also cover various methods of yarn texturisation.

- Rastogi, D. and Chopra, S. (Ed) (2017) *Textile Science*, India: Orient Black Swan Publishing Limited. Chapter 4.

- Sekhri S. (2016) *Textbook of Fabric Science: Fundamentals to Finishing*, 2E, Delhi: PHI Learning Private Ltd. Chapters 9-10.

UNIT III

This unit covers details of production of woven fabrics including details working of the loom, yarn preparation for weaving and the detailed process of the weaving operations. The students will learn about the shedding, picking and beating up mechanisms along with the primary and secondary motions of the loom. Various shuttle and shuttle less looms and preparation of draft and peg plans will also be introduced.

- Rastogi, D. and Chopra, S. (Ed) (2017) *Textile Science*, India: Orient Black Swan Publishing Limited. Chapters 6-8.
- Schwartz, P. (1979) *Fabric Forming Systems*, School of Textiles, North Carolina State University.
- Sekhri S. (2016) *Textbook of Fabric Science: Fundamentals to Finishing*, 2E, Delhi: PHI Learning Private Ltd. Chapters 11-13.

UNIT IV

This unit will cover the basics of knitting and non-wovens production. It includes structure of knitted fabrics, their properties. It also includes, types of knitting machines, their parts and working. Students will also learn about detailed production techniques of non-woven fabrics.

- Brackenbury, T. (1988). *Knitted clothing technology* (1st ed.). Blackwell Science.
- Rastogi, D. and Chopra, S. (Ed) (2017) *Textile Science*, India: Orient Black Swan Publishing Limited. Chapters 6-8.
- Schwartz, P. (1979) *Fabric Forming Systems*, School of Textiles, North Carolina State University.
- Spencer, D.J. (2005) *Knitting Technology: A Comprehensive Handbook and Practical Guide*, 4th ed. Cambridge: Woodhead Publishing.

Suggested Readings

- Bhardwaj, S.K. and Mehta, P.V. (1998) Managing Quality in the Apparel Industry, New Delhi, New Age International
- Booth, J. E. (1982) Principle of Textile Testing, Meanness Butter worth scientific, London
- Brackenbury, T. (2005). *Knitting Clothing Technology*, Blackwell Science Publishers
- Eric, O. (1975). *Spun Yarn Technology*, Butterworth Publication.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
STATISTICS AND DATA MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Statistics and Data Management	4	3	0	1	As per admission criteria	Nil

Learning Objectives

- To develop understanding of fundamental and advanced statistical concepts used in research and data analysis.
- To enable students to apply descriptive and inferential statistics for real-world decision-making.
- To strengthen ability to formulate hypotheses, select appropriate statistical tests, and interpret outputs.
- To prepare students for quantitative research, industry analytics, and academic data projects.
- To train students in using Excel and SPSS for data handling, visualization, and interpretation.

Learning Outcomes

The students would be able to:

- Explain key concepts in descriptive and inferential statistics.
- Organize, clean, and summarize datasets using appropriate statistical tools.
- Apply probability distributions, correlation, regression, and hypothesis testing.
- Use Excel and SPSS for data visualization, statistical testing, and reporting.
- Interpret statistical outputs and draw valid conclusions for research decisions.
- Design and execute quantitative data analysis workflows independently.

THEORY

(Credits 3; Hours 45)

UNIT I: Introduction and descriptive Statistics **12 Hours**

This unit will introduces the foundations of statistics and techniques for summarizing and describing data.

- Definition, scope, and applications of statistics
- Types of data: qualitative and quantitative
- Scales of measurement
- Classification & tabulation of data
- Graphical and visual representations
- Measures of central tendency: mean, median, mode
- Measures of dispersion: range, variance, standard deviation, coefficient of variation
- Skewness and kurtosis: meaning and interpretation

UNIT II: Probability and Probability Distributions **10 Hours**

This unit explores probability concepts and major statistical distributions.

- Basic probability concepts: Addition & multiplication theorems
- Random variables: discrete and continuous variable
- Binomial, Poisson and Normal distributions
- Sampling theory & sampling distributions
- Central Limit Theorem

UNIT III: Correlation and regression **8 Hours**

This unit focuses on analysing relationships between variables.

- Correlation: Pearson and Spearman correlation
- Simple linear regression: model, estimation, interpretation
- Multiple linear regression: assumptions, multicollinearity, model building

UNIT IV: Hypothesis testing and non-parametric methods **15 Hours**

This unit introduces hypothesis testing frameworks and non-parametric alternatives for non-normal data.

- Concept of hypothesis: null & alternative
- Types of errors, significance levels, p-value
- Parametric tests:
    - z-test
    - t-test (one sample, independent, paired)
    - ANOVA- One way
    - Chi-square test
- Non-parametric tests:
    - Mann–Whitney U test
    - Wilcoxon signed-rank test
    - Kruskal–Wallis test

- Interpretation and reporting of statistical results
- Research Conclusion and recommendation

PRACTICAL

(Credits 1; 30 hours)

1. Data Entry, Coding & Cleaning: Importing data, handling missing values, variable labels, Excel formulas.
2. Descriptive Statistics & Visualization: Mean, Standard Deviation, frequency tables, histograms, boxplots (Excel + SPSS).
3. Cross-Tabulation & Chi-Square Test: PivotTables in Excel; Crosstabs in SPSS.
4. Correlation Analysis: Pearson & Spearman correlations; scatterplots.
5. Simple Linear Regression: Trendline in Excel; Regression output in SPSS.
6. Multiple Regression: Model summary, coefficients, interpretation using SPSS.
7. t-Tests: Independent, paired, and one-sample t-tests in SPSS.
8. ANOVA (One-way & Two-way): Running ANOVA and post-hoc analysis.
9. Non-Parametric Tests: Mann-Whitney, Wilcoxon, Kruskal–Wallis in SPSS.
10. Report Generation & Interpretation
11. Preparing APA-style tables, graphs, and interpretations in Excel/SPSS.

Essential Readings:

UNIT I

This unit describes the foundations of statistics and techniques for summarizing and describing data.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.). Pearson Prentice Hall.
- Bernard, H. R. (2000). *Social research methods: Qualitative and quantitative approaches*. Sage.
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.). CreateSpace Independent Publishing Platform.
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*. Wiley.

UNIT II

This unit deals with the probability concepts, rules of probability, discrete and continuous distributions (Binomial, Poisson, Normal).

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).

- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*.

UNIT III

This unit focuses on relationship between variables, correlation coefficients, simple and multiple regression, regression assumptions.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Muijs, D. (2004). *Doing quantitative research in education with SPSS*. Sage.

UNIT IV

The unit deals with statistical inference such as t-tests, ANOVA, Chi-square, non-parametric tests (Mann-Whitney, Wilcoxon, Kruskal-Wallis), decision making.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*.
- Muijs, D. (2004). *Doing quantitative research in education with SPSS*.

Suggested Readings

- Field, A. (2025). *Discovering Statistics Using IBM SPSS Statistics* (6th ed.). Sage.
- Kalyanaraman, K., Ramanathan, H. N., & Harikumar, P. N. (2025). *Statistical Methods for Research: A Step-by-Step Approach Using IBM SPSS*. Atlantic Publishers.
- Healey, J. F., & Donoghue, C. (2021). *Statistics: A Tool for Social Research and Data Analysis* (11th ed.).

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

COMMERCIAL FABRICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Commercial Fabrics	**4**	**3**	**1**	**0**	**As per admission criteria**	**Nil**

Learning Objectives

- To develop a foundational understanding of textile fibres, yarns, and fabric construction methods.
- To enhance the knowledge of commercially available fabrics, their properties, and identification techniques.
- To analyse fabric performance, finishes, and suitability for different end uses.
- To equip the students with skills to select appropriate fabrics based on structure, appearance, cost, and application.

Learning Outcomes

Students will be able to:

- Understand the fundamental components, structure, and construction of different fabrics.
- Identify and distinguish between various woven, knitted, non-woven, and traditional Indian textiles.
- Analyse fabric properties, finishes, and end uses for appropriate selection in apparel and textiles.
- Apply practical knowledge to evaluate fabric samples, market options, and industry trends.

THEORY
(Credits 3; Hours 45)

UNIT I: Components of Fabric Structure — 10 Hours

- Fibres and yarns
- Methods of fabric construction
- Fabric finishing: dyeing, printing, and functional/aesthetic finishes
- Sustainability and chemical compliance standards (OEKO-TEX, REACH, GOTS, GRS, BCI, Blusign, RCS)

UNIT II: Commercially Important Woven Fabrics – Identification, Properties & End Uses **12 Hours**

- Cellulosic fabrics: Mulmul, Voile, Organdy, Cambric, Poplin, Cotton, Canvas, Denim, Casement, Terry, etc.
- Silk and wool fabrics: Silk crepe, Georgette, Chiffon, Organza, Satin, Taffeta, Tweed, Tussar, Wool twill, etc.
- Man-made and blended fabrics: Art silk, Lycra blends, Polyester, Viscose, Moss crepe, Georgette, etc.

UNIT III: Commercially Important Knitted & Non-Woven Fabrics – Identification, Properties & End Uses **12 Hours**

- Knitted fabrics: Terry knit, Jersey, Rib knit, Interlock knit, Piqué, Velour, etc.
- Non-woven fabrics: Types, weights, and applications
- Others: Leatherette, Suede

UNIT IV: Traditional Indian Fabrics – Identification, Characteristics & Uses **11 Hours**

- Embroideries: Kantha, Phulkari, Chikankari, Kasuti, Kutch, etc.
- Woven fabrics: Brocade, Jamdani, Baluchari, Chanderi, Maheshwari, Kanjeevaram, etc.
- Dyed/Printed fabrics: Bandhani, Kalamkari, Ikat, Patola, Dabu prints, Ajrakh prints, etc.

TUTORIAL

(Credits 1; 15 hours)

1. Examine and differentiate various natural, man-made, and blended fibres and yarns based on appearance, feel, and basic properties.
2. Collect and classify commonly used woven fabrics, noting their weave type, characteristics, and typical applications.
3. Assemble samples of knitted fabrics and identify structural variations such as single jersey, rib, interlock, and pique.
4. Gather samples of non-woven materials and study their methods of manufacture, features, and end uses.
5. Observe and document different construction methods such as weaving, knitting, braiding, and felting, highlighting their influence on fabric performance.
6. Explore selected Indian traditional fabrics, understanding their motifs, techniques, regional specialties, and cultural significance.
7. Prepare and present a brief report analysing selected fabrics in terms of fibre content, construction, properties, finishes, and suitable end-uses

Essential Readings

UNIT I

This unit covers the basic building blocks of textiles including fibres, yarns, fabric construction methods, and finishing processes. Emphasis is also placed on sustainability, eco-labels, and chemical compliance standards followed in the Indian and global textile industry

- Corbman, B. P. (2016). Textiles: Fiber to fabric (6th ed.). McGraw-Hill Education.
- Kadolph, S. J. (2017). Textiles (12th ed.). Pearson Education.
- Gohl, E. P. G., & Vilensky, L. D. (2013). Textile science: An explanation of fibre properties (2nd ed.). CBS Publishers & Distributors.
- Majumdar, P. K. (2010). Textile fibres. PHI Learning.
- Fletcher, K., & Grose, L. (2012). Fashion & sustainability: Design for change. Laurence King.

UNIT II

This unit introduces commonly used woven fabrics made from natural, man-made, and blended fibres, focusing on their identification, properties, and suitability for various end uses in apparel and home furnishings.

- Hatch, K. L. (2018). Textile science. Bloomsbury Publishing.
- Tortora, P. G., & Johnson, I. (2019). The Fairchild books dictionary of textiles (9th ed.). Bloomsbury.
- Banerjee, S. (2011). Textile science fundamentals. PHI Learning.
- Corbman, B. P. (2016). Textiles: Fiber to fabric. McGraw-Hill Education.

UNIT III

This unit deals with basic knit structures, types of knitted fabrics, non-woven textiles, and their properties, applications, and performance characteristics in apparel and technical textiles.

- Spencer, D. J. (2018). Knitting technology (4th ed.). Woodhead Publishing.
- Russell, S. (2016). Handbook of nonwovens. Woodhead Publishing.
- Anbumani, N. (2007). Knitting fundamentals, machines, structures and developments. New Age International.
- Ajmeri, J. R., & Ajmeri, C. J. (2016). Nonwoven textiles: Technology. New India Publishing Agency.
- Hearle, J. W. S., & Morton, W. E. (2008). Physical properties of textile fibres. Woodhead Publishing.

UNIT IV

This unit focuses on traditional Indian textiles including embroideries, woven fabrics, and surface-designed textiles, highlighting regional diversity, techniques, cultural importance, and contemporary relevance.

- Chattopadhyay, K. (2019). Indian textiles. Wiley Eastern.
- Biswas, K. (2018). Textiles of India. National Book Trust.
- Dhamija, J. (2004). Craft traditions of India. National Handicrafts & Handlooms Museum.

- Varadarajan, L. (2015). Indian costume and textiles. Prentice Hall of India.

Suggested Readings

- Jain, J., & Jain-Neubauer, J. (2015). *The spectrum of Indian textiles.* Niyogi Books
- Gillow, J., & Barnard, N. (2015). *Traditional Indian textiles*. Thames & Hudson.
- Rastogi. D(Ed)and Chopra S. (Ed)(2017) *Textile Science*, India : Orient Black Swan.
- Sekhri S. (2011) *Textbook of Fabric Science: Fundamentals to Finishing*, Delhi: PHI Learning

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
WOMEN'S WEAR: CONCEPT TO CREATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Women's Wear: Concept to Creation	4	2	0	2	As per admission criteria	Nil

Learning Objectives

- To gain an understanding and knowledge of the industry involved in women's wear.
- To develop skills in designing a theme-based collection of garments for women's wear.
- To apply advanced pattern making and construction techniques for women's wear.
- To understand the role of fashion accessories in complementing the outfit.

Learning Outcomes

The students would be able to:

- Understand the market involved in women's wear.
- Comprehend the components of design and their application for line development
- Independently design a line for women's fashion wear
- Describe the role of fashion accessories in defining the overall look.

THEORY
(Credit 2; 30 Hours)

UNIT I: Introduction to Women's Wear **6 Hours**

This unit introduces the student to the growth and development of women's wear industry.

- Scope and significance of Women's wear within the fashion industry
- Classification of women's wear: western/ethnic / fusion / contemporary; formal/casual; occasion wear, resort wear, intimate wear, maternity, plus-size etc.
- Key eras shaping women's fashion and global influences
- Market segmentation in women's wear based on pricing strategies, brand tiers (Haute couture, luxury, diffusion, high street etc.)

UNIT II: Research, Trends & Concept Development **10 Hours**

This unit covers the process of trend forecasting and the understanding of consumer profiles. It also helps in building the concept story for line development.

- Trend forecasting- steps, drivers of change: socio-cultural, technological, economic, environmental, forecasting agencies, fashion seasons
- Consumer types and profiling based on demographics, psychographics, lifestyle etc.
- Building a concept story for line development- design idea/inspiration, mind map, theme/mood board
- Translating concept into colours, silhouettes, design details, textures, fabrics

UNIT III: Product Development and Presentation **6 Hours**

This unit focuses on line planning and design sketching, leading to product development and its presentation.

- Line planning and range development
- Pattern making, fabric sourcing, garment prototype and fit analysis, garment costing
- Design documentation and presentation of line/collection: Lookbooks, runway, digital presentation, collection storytelling, visual strategies

UNIT IV: Fashion Accessories for Women **8 Hours**

This unit gives an overview of various accessories used to complete an overall look in women's fashion.

- Scope and role of accessories in completing the look
- Types of accessories- bags, purses, footwear, scarves and stoles, hats, gloves, hosiery, jewellery, watches and belts
- Materials and components used in accessories

PRACTICAL
(Credit 2; 60 Hours)

1. Design inspiration for line development and working on a mind map
2. Development of Theme/mood board and story board including colours, silhouettes, textures, fabrics, motifs, design details
3. Line planning, customer profile, sketching, and finalization of design collection based on the theme
4. Developing patterns for two of the above selected designs using flat pattern making or draping and planning pattern layout, preparation of Teck-pack
5. Fabric sourcing, cutting and stitching of the garments, incorporating advanced sewing skills
6. Fit evaluation and finalization, portfolio presentation

Essential Readings

UNIT I:

This unit introduces students to the growth, scope, and importance of women's wear within the fashion industry. It covers the classification of women's apparel based on style, function, and consumer needs, including western, ethnic, fusion, formal, casual, and specialized categories. The unit examines key historical eras and global influences shaping women's fashion. It also provides an understanding of market segmentation, pricing strategies, and brand tiers such as haute couture, luxury, diffusion, and high-street fashion.

- Brown, P., & Rice, J. (2014). *Ready to wear apparel analysis* (4th ed.). Pearson Education. New Delhi
- Dickerson, K. G. (2007). *Inside the fashion business*. Upper Saddle River, NJ: Pearson Education, Inc.
- Frings, G. S. (2014). *Fashion: From Concept to Consumer* (10th ed.). Pearson Education.
- Tate, S. L., & Edwards, M. S. (2003). *Inside fashion design* (5th ed.). Pearson Education, Inc..

UNIT II:

This unit focuses on the research-driven design process essential for women's wear development. Students learn the principles of trend forecasting, including drivers of change and fashion cycles. The unit emphasizes consumer profiling through demographic, psychographic, and lifestyle analysis. It also develops skills in concept creation, enabling students to translate inspiration into cohesive design ideas using mood boards, colour stories, silhouettes, fabrics, and textures.

- Dragt, E. (2017). *How to Research Trends: Move Beyond Trendwatching to Kickstart Innovation*. BIS Publishers.
- Raymond, M. (2010). *The Trend Forecaster's Handbook*. Laurence King Publishing.
- Renfrew, E., & Renfrew, C. (2009). *Basics fashion design 04: Developing a collection*. Switzerland: Ava Publishing SA.
- Stamper, A. A., Sharp, S. H., & Donnell, L. B. (2005). *Evaluating apparel quality*. New York, NY: Fairchild Fashion Group.

UNIT III:

This unit introduces students to the product development process from concept to finished collection. It covers line planning, range development, and design translation into garments. Students gain foundational knowledge of pattern making, fabric sourcing, prototyping, fit analysis, and garment costing. The unit also emphasizes professional presentation techniques, including design documentation, lookbooks, collection storytelling, and digital or runway presentations.

- Armstrong, H. J. (2019). *Patternmaking for Fashion Design* (6th ed.). Pearson Education
- Brannon, E. L. (2011). *Designer's guide to fashion apparel*. New York, NY: Fairchild Books.
- Glock, R. E., & Kunz, G. I. (2014). *Apparel Manufacturing: Sewn Product Analysis* (5th ed.). Pearson.
- Hopkins, J. (2013). *Fashion Design: The Complete Guide*. AVA Publishing.
- San Martín, M. (2009). *Field guide: How to be a fashion designer*. Beverly, MA: Rockport Publishers.

UNIT IV:

This unit provides an understanding of the role of fashion accessories in enhancing and completing women's wear. It explores various types of accessories, including bags, footwear, scarves, jewellery, belts, and watches. The unit introduces materials, components, and construction considerations used in accessory design. Emphasis is placed on the aesthetic, functional, and market relevance of accessories within contemporary women's fashion.

- Dhir, Y.J. (2024). *Fashion Accessories: A Complete Guide to Raw Materials, Construction Methods and Styles* (1st ed.). CRC Press.
- Jones, S. J. (2011). *Fashion Design: Accessories*. Laurence King Publishing.
- Lau, J. (2021). *Basics fashion design 09: Designing accessories: Exploring the design and construction of bags, shoes, hats and jewellery*. Bloomsbury Publishing.
- Tortora, P. G., & Abling, B. (2003). *Encyclopaedia of Fashion Accessories*. Fairchild Books.

Suggested Readings

- Abling, B. and Maggio K. (2008) Integrating Draping, Drafting and Drawing, ISBN: 9781563674860, Fairchild books.
- Aldrich, W. (2008) Metric Pattern Cutting for Women's Wear, ISBN 10: 1405175672 / ISBN 13: 9781405175678, Wiley Blackwell Publication.
- Crawford. C.A. (2008), A Guide to Fashion Sewing, Fourth Edition. Fairchild Publications, Inc., New York.
- Crawford. C.A. (2018), The Art of Fashion Draping, ISBN: 9781501330292, Fairchild books.
- DiMarco, S., (2010) Draping Basics, ISBN: 9781563677366, Fairchild books.
- Fogg, M. (2013) Fashion The Whole Story. Thames & Hudson Ltd., London.
- Shoben, M.M. and Ward, J.P. (2000) Pattern Cutting and Making Up Volume 2, Revised Edition, LCFS Fashion Media

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
TECHNICAL TEXTILES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Technical Textiles	4	3	1	0	As per admission criteria	Nil

Learning Objectives

- To develop an understanding of the concepts, scope, and functional requirements of technical textiles.
- To critically examine the application of technical textiles across diverse sectors such as construction, healthcare, transport, geotechnical engineering, and industry.

Learning Outcomes

Students will be able to:

- Understand the properties and performance of a range of technical textiles.
- Analyse appropriate uses for a variety of fabrics, yarns and fibres in various areas like construction, healthcare, transport etc.
- Generate and develop creative ideas for the use of technical textiles.

THEORY

(Credits 3; Hours 45)

UNIT I: Introduction to Technical Textiles **5 Hour**

This unit covers the fundamentals of technical textiles, including their importance, scope and classification.

- Overview of technical textiles
- Importance and scope
- Classification of technical textiles

UNIT II: Technical Fibers, Yarns, fabrics and composites **16 Hour**

This unit highlights the types, properties and structural forms of technical fibers, yarns and fabrics, along with fundamentals of textile composites and their manufacturing processes.

- Technical fibers: Synthetic, Regenerated and Natural.

- Technical yarns: Filament, Spun and Composite
- Technical fabrics: woven, knitted, nonwoven, braided, laminated, coated, multilayer and 3D structures for technical applications.
- Textile composites: reinforcement textiles, matrix materials, composite manufacturing processes.

UNIT III: Application Area **16 Hour**

This unit provides an overview of major technical textile sectors, emphasizing functional requirements and end-use applications.

- Agrotech
- Buildtech
- Clothtech
- Meditech
- Oekotech
- Protech
- Indutech
- Packtech
- Hometech
- Geotech
- Sporttech
- Mobiltech
- Military textiles

UNIT IV: New Developments in Technical Textiles **8 Hour**

Explores recent innovations and their applications.

- Smart textiles
- Shape-memory, phase change material (PCM)
- Energy harvesting textiles
- Wearable sensors and actuators
- E-textiles and conductive materials

TUTORIAL

(Credits 1; Hours 15)

1. Fabric sourcing of various technical textile fabrics

Activity: Market/industry visits to source samples of technical textiles. Students will compare sourced fabrics based on construction, performance, cost, and prepare a brief analytical report.

2. Study of geometrical parameters of industrial textile fabrics

Discussion: Understanding yarn density, fabric thickness, porosity, cover factor, and other geometrical parameters related to technical performance in technical textiles. Activity: Laboratory evaluation of geometrical parameters for selected technical textile fabrics. Students will measure and interpret results to relate structure with performance.

3. Field visit on technical textile materials

Activity: Field/industry visits to technical textile manufacturing or trading units to observe materials, technologies, and applications. Students will prepare a detailed visit report.

4. Project work on any one Area of technical textiles

Discussion: Selection of a focused topic in technical textiles material, process, product innovation, testing or application area to develop analytical and research skills. Activity: Independent project work involving literature survey, data collection, experimentation (if applicable), and report writing. Students will present findings at the end of the semester.

Essential Readings

UNIT I

This unit introduces the fundamental concepts of technical textiles, emphasizing textiles developed primarily for functional and performance-based applications rather than decorative use. It provides an overview of technical textiles, their evolution, and distinguishing characteristics, followed by a discussion on their importance and expanding scope in various sectors such as healthcare, agriculture, construction, transportation, defense, and environmental protection. The unit also explains the classification of technical textiles based on end-use applications, enabling students to develop a clear conceptual understanding of the field and laying a strong foundation for advanced study in technical fibers, yarns, fabrics, and related technologies.

- Horrocks, A. R., & Anand, S. C. (Eds.). (2000). *Handbook of technical textiles (chapter 1)*. Elsevier.
- Horrocks, A. R. and Anand, S. C. (2015) Handbook of Technical Textiles, second edition, volume 1: technical textile processes, The Textile Institute, Woodhead Publishing.

UNIT II

This unit focuses on the types, properties, and structural forms of materials used in technical textiles, beginning with an in-depth study of technical fibers including synthetic, regenerated, and natural fibers and their performance characteristics. It covers technical yarns such as filament, spun, and composite yarns, followed by technical fabrics produced through weaving, knitting, nonwoven, braided, laminated, coated, multilayer, and three-dimensional structures for specialized applications. The unit also introduces textile composites, emphasizing reinforcement textiles, matrix materials, and fundamental composite manufacturing processes, enabling students to understand the material–structure–property relationship in technical textile products.

- Bunsell, A. R. (2009) Handbook of Tensile Properties of Textile and Technical Fibres, 1st Edition, Woodhead Publishing Series in Textiles.
- Horrocks, A. R., & Anand, S. C. (Eds.). (2000). *Handbook of technical textiles.* Elsevier.

UNIT III

This unit provides a comprehensive overview of the major application sectors of technical textiles, ranging from Agrotech to Military textiles, with emphasis on functional requirements, performance parameters, and end-use applications. It covers diverse areas such as agriculture, construction, medical, environmental protection, personal and industrial safety, packaging, home furnishings, geotechnical engineering, sports, transportation, and defense. Through this unit, students gain insight into how technical textiles are designed and selected based on specific end-use needs and regulatory requirements across different industrial sectors.

- Anand, S.C., Kennedy, J F., Miraftab, M., and Rajendran, S. (2005)Medical Textiles and Biomaterials for Healthcare, Woodhead Publishing Series in Textiles.
- Bartels, V. (2011) Handbook of Medical Textiles, 1st Edition, Woodhead Publishing Series in Textiles.
- Horrocks, A. R., & Anand, S. C. (Eds.). (2000). *Handbook of technical textiles. (chaps 13-18)* Elsevier.
- https://gphisar.ac.in/wp-content/uploads/2022/09/Technical-Textiles-5th-Sem-TT-Study-M.pdf
- https://www.scribd.com/document/696654830/Technical-Textile

UNIT IV

This unit explores recent advancements and emerging technologies in the field of technical textiles, focusing on innovative materials and smart systems. It introduces smart textiles, shape-memory materials, phase change materials (PCM), energy-harvesting textiles, wearable sensors and actuators, and e-textiles with conductive materials. The unit highlights the role of interdisciplinary research and innovation in enhancing functionality, comfort, monitoring, and sustainability, preparing students to understand future trends and research opportunities in technical textiles.

- Tasaltin, N., Nnamchi, P. S., & Saud, S. (Eds.). (2020). *Advanced Functional Materials (chapter 14)*. BoD–Books on Demand.
- Sharma, S., Shukla, S. K., Singh, A., Govender, K. K., & Govender, P. P. (2025). E-Textiles in Biomedicine: Real Time Sensing, Energy Storage, and Therapeutic Applications. *Advanced Materials Interfaces*, e00672. https://doi.org/10.1002/admi.202500672
- Pandey, A., Tiwari, K. P., & Misra, R. Smart Materials for Next-Generation Electronics and Energy Storage.
- Younes, B. (2023). Smart E-textiles: A review of their aspects and applications. *Journal of Industrial Textiles*, *53*, 15280837231215493.https://doi.org/10.1177/1528083723121549

- De Rossi, D., Carpi, F., & Galantini, F. (2009). Functional materials for wearable sensing, actuating and energy harvesting. *Advances in Science and Technology*, *57*, 247-256. https://doi.org/10.4028/www.scientific.net/AST.57.247
- Bunsell, A. R. (2009) Handbook of Tensile Properties of Textile and Technical Fibres, 1st Edition, Woodhead Publishing Series in Textiles.
- Chapman, R. (2012) Smart Textiles for Protection, Woodhead Publishing Series in Textiles.

Suggested Readings

- Horrocks, A. R. and Anand, S. C. (2015) Handbook of Technical Textiles, second edition, volume 1: technical textile processes, The Textile Institute, Woodhead Publishing.
- Horrocks, A. R. and Anand, S. C. (2016) Handbook of Technical Textiles, second edition, volume 2: technical textile applications, The Textile Institute, Woodhead Publishing.
- Langenhove, L.V. (2007) Smart Textiles for Medicine and Healthcare: Materials, Systems and Applications, Woodhead Publishing Series in Textiles, 1st Edition.
- Tao, X. (2001) Smart Fibres, Fabrics and Clothing: Fundamentals and Applications, Woodhead Publishing Series in Textiles.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
PSYCHOLOGY OF FASHION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Psychology of Fashion	**4**	**3**	**1**	**0**	**As per admission criteria**	**Nil**

Learning Objectives

- Understand foundational psychological theories related to dress and appearance.
- Analyse how clothing influences cognition, emotions, and social interactions.
- Evaluate psychological drivers of fashion consumption.
- Examine ethical and digital fashion behaviour through psychological frameworks.
- Apply psychological insights to fashion design, branding, merchandising, and consumer experience.

Learning Outcomes

The students would be able to:

- Explain major psychological theories related to dress and appearance.
- Analyse how identity, personality, culture, and society shape fashion choices.
- Evaluate consumer motivations behind buying, adopting, and rejecting fashion.
- Apply psychological principles to fashion marketing, branding, and sustainability.
- Interpret clothing as a tool for personal expression, communication, and behaviour change.

THEORY

(Credits 3; Hours 45)

UNIT I: Foundation of Fashion Psychology **13 Hours**

This unit will introduce the various functions clothes serve. The unit will focus on various psychological theories that play an important part in clothing choices

- Functions of clothing and fashion
  - Material functions (Protection, modesty and concealment, immodesty and attraction)

- Cultural functions (Communication, individualistic expression, social worth or status, definition of social role, economic worth or status, political symbol, religious and social ritual, recreation etc.)

- Core Psychological Theories
  - Self-concept and identity
  - Social comparison theory
  - Goffman's impression management
  - Clothing and body image
  - Appearance management and self-esteem

UNIT II: Consumer Psychology and fashion adoption **10 Hours**

This unit introduces key factors that govern consumers towards fashion adoption. The unit also highlights how the knowledge of consumer psychology is used for marketing of clothes.

- Motivation, perception, learning & attitudes in fashion consumption
- Fashion adoption & diffusion of innovations
- Hedonic vs utilitarian consumption
- Advertising psychology: persuasion, imagery, symbolism
- Digital fashion psychology (social media, influencers)
- Luxury consumption psychology
- Impulse buying & compulsive buying

UNIT III: Applied Fashion Psychology **12 Hours**

This unit focuses on analyzing consumer behavior within social and cultural psychological frameworks.

- Fashion therapy & clothing for mental well-being
- Psychological barriers to sustainable fashion
- Cognitive dissonance & ethical decision-making
- Behaviour change models (TPB, nudging, habits)
- Anti-fashion, minimalism, slow fashion
- Fashion for special needs populations (e.g., inclusive design)

UNIT IV: Virtual Dressing and Digital Fashion Psychology **10 Hours**

This unit examine digital fashion behaviour through psychological frameworks. Dress and body through virtual view and virtual fit.

- Dress and perception of virtual 3D self-images: comfort with body scanning
- Imaginary self in virtual world
- Virtual try-on influencing purchase decisions.
- AI-driven styling and psychological profiling.

TUTORIAL
(Credits 1; 15 Hours)

1. Class Discussion: "Why do people dress the way they do?" (Using real examples from campus/industry)
2. Mini Case Analysis:
   a. Analyse clothing choices of a public figure using theory of symbolic interactionism.
   b. Analyse why luxury consumers pay the "premium" using psychological theories.
3. Activity – Clothing Diary: Students document their outfits for 5 days and note psychological motives each day.
4. Short Reflection: Write 300 words on how a specific clothing item affects your confidence (enclothed cognition).
5. Group Presentation: Present "Functions of Clothing in Different Cultures."
6. Brand Psychology Audit: Analyse a fashion brand's personality and emotional appeal.
7. Sustainability Dissonance Task: Reflect on a time one bought something unsustainable—identify psychological conflict.
8. Slow Fashion Diary: Track clothing usage for 10 days to study personal consumption.
9. Virtual Fashion Avatar Activity: Students design digital avatars and analyse psychological choices behind features.
10. Students experience two contrasting avatar appearances (professional vs. casual, bold vs. minimal). They write a short reflection on how their behaviour or confidence changed.
11. AI Stylist Activity: Students test an AI-based styling tool and evaluate how personalization influences feelings of identity validation or enhancement.

Essential Readings

UNIT I

This unit introduces psychological, social, and cultural functions of clothing, focusing on identity, self-concept, body image, and impression management.

- Kaiser, S. B. (2012). Fashion and cultural studies (2nd ed.). Bloomsbury Academic.
- Barnard, M. (2014). Fashion theory: An introduction (2nd ed.). Routledge.
- Banerjee, S. (2018). Psychology of fashion. PHI Learning, India.
- Mukherjee, A. (2020). Clothing, identity and social meaning in India. Indian Journal of Social Psychology, 31(2), 145–158.

UNIT II

This unit focuses on consumer motivation, perception, fashion adoption, diffusion of trends, advertising psychology, digital influence, and luxury consumption.

- Solomon, M. R. (2018). Consumer behaviour: Buying, having, and being (12th ed.). Pearson Education.
- Rogers, E. M. (2003). Diffusion of innovations (5th ed.). Free Press.

- Easey, M. (2009). Fashion marketing (3rd ed.). Wiley-Blackwell.
- Schiffman, L. G., & Wisenblit, J. (2019). Consumer behaviour (12th ed.). Pearson.
- Batra, R., & Kazmi, S. H. H. (2019). Consumer behaviour (3rd ed.). Excel Books, New Delhi.
- Jain, S., & Pant, S. (2021). Digital fashion consumption among Indian youth. Journal of Fashion Marketing and Management, 25(3), 465–480.

UNIT III

This unit applies psychological theories to fashion for mental well-being, sustainability, ethical decision-making, behaviour change, and inclusive design.

- Fletcher, K. (2014). Sustainable fashion and textiles: Design journeys (2nd ed.). Routledge.
- Gwilt, A. (2020). A practical guide to sustainable fashion. Bloomsbury Visual Arts.
- Joy, A., Sherry, J. F., Venkatesh, A., Wang, J., & Chan, R. (2012). Fashion Theory, 16(3), 273–295.
- Desai, R., & Shukla, P. (2019). Fashion and sustainability in India. Bloomsbury India.
- Narang, R. (2020). Sustainable fashion behaviour in India. Journal of Textile and Apparel Studies, 4(1), 22–30.
- Kawamura, Y. (2016). Doing research in fashion and dress. Bloomsbury Academic.

UNIT IV

This unit explores psychological responses to virtual fashion, digital self-image, virtual try-on, AI-driven styling, and technology-mediated fashion behaviour.

- Kim, J., & Forsythe, S. (2008). Adoption of virtual try-on technology. Journal of Interactive Marketing, 22(2), 45–59.
- Choi, T. M. (2020). Artificial intelligence and big data analytics for fashion industry. Springer.
- Pine, B. J., & Gilmore, J. H. (2011). The experience economy. Harvard Business Review Press.
- McKinsey & Company. (2022). The state of fashion: Technology and digital transformation.
- Narkhede, B. E., & Bhattacharya, S. (2021). Digital fashion retail transformation in India. International Journal of Fashion Design, Technology and Education, 14(3), 385–395.

Suggested Readings

- Almond, K. (2017). *Basics Fashion Design: Draping*. Bloomsbury Publishing.
- Kim, J. H., & Lennon, S. (2013). “Emotional and Cognitive Reactions in Online Shopping.” *Psychology & Marketing*.
- McCracken, G. (1986). "Culture and Consumption." *Journal of Consumer Research*.

- Vigneron, F., & Johnson, L. (2004). “Luxury Brand Consumption Behavior.” *Journal of Brand Management*.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

HISTORY OF FASHION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
History of Fashion	4	3	1	0	As per admission criteria	Nil

Learning Objectives

- To study the development of costume from ancient times to the 20th century, considering socio-cultural and technological changes.
- To create awareness and understanding of the styles and special features in costume through the ages.

Learning Outcomes

The students would be able to:

- Trace the evolution of western costume.
- Identify different styles and special features in costume through the ages.
- Draw inspiration from the long-established styles for designing.

THEORY
(Credits 3; Hours 45)

UNIT I: Importance of World Textiles and Costumes in Historical Perspective. 6 Hours

This unit outlines the historical perspective of the origin of textiles and costumes.

- Sources of information for historic costumes
  - Archaeological excavations and discoveries
  - Ancient literature, chronicles and archival records
  - Museums and art galleries
  - Sculpture and pottery
- The origin of costume
- Costume through the ages- inspiration for designing and styling

UNIT II: Costumes in Early Civilizations **10 Hours**

This unit focuses on the origin and evolution of Costumes in ancient civilizations (300BC-300 AD)

- Mesopotamia
- Egypt
- Greece
- Rome
- India

UNIT III: Costumes in the Middle Ages **13 Hours**

This unit aims to explore the advancements in textiles and costumes during the Middle Ages.

- The Feudal ages (1100 AD- 1300AD)
- The late Middle Ages (1300AD-1500AD)
- Renaissance: Italy, France, England (15th-16th century)
- India: Mughal period

UNIT IV: Costumes in 17th to 20th century **16 Hours**

This unit highlights the changes and developments in European costumes through different eras from 17th to 20th century reflecting social milieu and technological advancements.

- Baroque and Rococo periods – France and England
- French Revolution and thereafter (1790AD-1900AD)
- The Directoire and Empire period (1790AD-1820AD)
- The Romantic period (1820A.D-1850AD)
- The Crinoline period (1850 AD-1869AD)
- The Bustle period (1870 AD- 1900 AD)
- Early Twentieth Century

TUTORIAL

(Credit 1; Hours 15)

- To make a report or presentation on any two design collections of eminent designers inspired by historic costumes.
- To showcase costumes styles of the ancient civilizations through draping technique.
- To discuss and design garments and accessoies inspired from any one ancient civilization
- To make a presentation on any one prominent component of a period costume with reference to raw material, construction, embellishments/styling, use etc.
- Case study of a historical figure (E.g. Cleopatra, Queen Elizabeth I, Emperor Akbar,

Napoleon, Louis XIV etc.) for analyzing their costumes with reference to textile materials and colours used, styling of garments, silhouette, accessories etc.

- To make a Presentation on highlighting development in textiles and costumes during 17th to early 20th century with respect to the influence of socio-cultural, technological factors on styling of costumes.

Essential Readings

UNIT I

This unit highlights the historical perspective of the origin of textiles and costumes. It covers the study of various sources of information on the history of costumes and fashion. It further elaborates on the evolution of costume styles through the ages.

- Black, J. A. and Garland M. (1978) A History of Fashion, London: Orbis Publishing Ltd. (Chapter 1)
- Tortora, P. G., & Marcketti, S. B. (2021). Survey of historic costume: A history of Western dress (7th ed.). Fairchild Books. (Chapter 1)
- Cole, D. J., & Deihl, N. (2015). The history of modern fashion: From 1850. Laurence King Publishing.

UNIT II

This unit covers the details of costumes prevalent in the ancient civilisations, from 300 BCE to 300 AD. The costumes and fashion prevalent in the Mesopotamian, Egyptian, Greek, Roamn and Indian Civilisations are discussed in details.

- Alkazi, R. (1983) Ancient Indian Costume, Art Heritage Books.
- Black, J. A. and Garland M. (1978) A History of Fashion, London: Orbis Publishing Ltd. (Chapter 2 - 6)
- Singh, M. (2017). Traditional Indian costumes and textiles. National Institute of Fashion Technology (Chapter 1-5)
- Tortora, P. G., & Marcketti, S. B. (2021). Survey of historic costume: A history of Western dress (7th ed.). Fairchild Books. (Chapter 2 & 3)

UNIT III

This unit elaborates on the developments in fashion during the Middle Ages across the feudal ages, late Middle Ages, Renaissance period and the Mughal period.

- Black, J. A. and Garland M. (1978) A History of Fashion, London: Orbis Publishing Ltd. (Chapter 7 - 12)
- Tortora, P. G., & Marcketti, S. B. (2021). Survey of historic costume: A history of Western dress (7th ed.). Fairchild Books. (Chapter 4 - 6)
- Singh, M. (2017). Traditional Indian costumes and textiles. National Institute of Fashion

Technology (Chapter 9)
- Kumar, R. (2010). Costumes and textiles of royal India. Christie's Books.

UNIT IV

This unit highlights the changes and developments in European fashion through different eras from 17th to 20th century discussing with reference to social milieu and technological advancements.

- Black, J. A. and Garland M. (1978) A History of Fashion, London: Orbis Publishing Ltd. (Chapter 13- 21)
- Cole, D. J., & Deihl, N. (2015). The history of modern fashion: From 1850. Laurence King Publishing.
- Tortora, P. G., & Marcketti, S. B. (2021). Survey of historic costume: A history of Western dress (7th ed.). Fairchild Books. (Chapter 7 - 12)

Suggested Readings

- Breward, C., Lemire, B., & Riello, G. (Eds.). (2023). The Cambridge Global History of Fashion, Volume 1: From antiquity to the 1800s. Cambridge University Press.
- Cumming, V. (2004) Understanding Fashion History, London: Batsford.
- Evans, C., & Nguyen, E. (Eds.). (2023). Fashion history: A global view (2nd ed.). Bloomsbury.
- Lester, K.M. (1956) Historic Costume, llinois: Chas A Bennett Co. Inc.
- Peacock, J. (2007) The Chronicle of Western Costume, Thames and Hudson.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
TEXTILE HERITAGE OF INDIA

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Textile Heritage of India	4	3	0	1	As per admission criteria	

Learning Objectives

- To create awareness and foster appreciation of the country's rich handcrafted textiles.
- To acquaint students about the handloom sarees, shawls, carpets and floor coverings of various regions.
- To impart knowledge about the various embroidered and painted textiles.

Learning Outcomes

Students will be able to:

- Recognise and identify embroidered fabrics of different states in terms of stitches, colours, motifs and their significance.
- Explain material and design of selected handloom fabrics.
- Describe the historical perspective, production and techniques of various shawls, carpets and floor coverings.
- Discuss the significance of certification and GI tag for traditional textile crafts.

THEORY
(Credits 3; Hours 45)

UNIT I: Handloom Sarees — 12 Hours

This unit will highlight the importance of certification and GI tag for traditional textiles. The unit will focus upon handloom sarees from diverse regions with respect to history, production centre, techniques, designs and colours.

- Kota doria (Rajasthan), Paithani (Maharashtra), Chanderi and Maheshwari (Madhya Pradesh), Gadwal (Telangana), Kasavu (Kerala), Bomkai (Odisha), Pochampally (Andhra Pradesh)

UNIT II: Shawls **7 Hours**

This unit will provide an overview of diverse materials, techniques, and design features of shawls produced across different regions.

- Kinnauri and Kullu (Himachal Pradesh), Kanikar and Amlikar (Kashmir), Northeast Shawls.

UNIT III: Carpets and Floor Coverings **8 Hours**

This unit highlights the variety of carpets and the distinctive production techniques, designs, and colours associated with each of the following floor coverings.

- Hand-Knotted carpets
- Bhutia carpets
- Namda and Gabba, Kashmir
- Durries : Panja durri of Punjab and Haryana, Chindi durri

UNIT IV: Embroidered and Painted Textiles **18 Hours**

This unit explores the materials, techniques, motifs, and colour traditions found in India's embroidered and painted textiles.

- Embroideries: Chamba Rumal (Himachal Pradesh), Zardozi (Uttar Pradesh), Suf (Gujarat), Toda (Tamil Nadu), Manipur, Banjara (Telangana), Applique work: Pipli (Odisha) and Gotta Patti (Rajasthan).
- Painted textiles: Pichwai painting of Nathdwara and Phad painting (Rajasthan), Thankga painting (Ladakh), Mata ni Pachedi of Gujarat.

PRACTICAL

(Credit 1; Hours 30)

1. Create samples of traditional embroideries.
2. Develop a design catalogue on traditional textile crafts.
3. Create a sample of tapestry weave used in shawl making
4. Prepare an interview schedule for the study of chosen textile craft and craftsmen and administer the prepared interview schedule on selected artisan samples
5. Documentation of a selected textile craft
6. Create products inspired from traditional textiles.

Essential Readings

UNIT I

This unit explores handloom sarees from across India, highlighting their history, production, techniques, and designs. From Kota Doria to Paithani, Chanderi, and more, each saree showcases unique traditions and craftsmanship. It will also uncover the importance of certification and GI tags in promoting and protecting these textiles, celebrating the artisans who weave culture, history, and beauty.

- Barnard, N., Gillow, J., 1993, Indian Textiles, Thames and Hudson, USA
- Chattopadhaya, K.D., 1995, Handicrafts of India, Wiley Eastern Limited, N Delhi
- Crill, R., 2015, The Fabric of India, Victorial and Albert Museum, UK
- Chishti R. K., Kelkar R. & Singh M. (2010). Saris of India : tradition and beyond. New Delhi: Lustre Press, Roli Books.
- Singh M. & Chishti R. K.,(1995). Saris of India : Bihar and West Bengal. New Delhi: Amr Vastr Kosh & Wiley Eastern Ltd Pune
- Das, Shukla, 1992, Fabric Art- Heritage of India, Abhinav Publications, N Delhi.
- GI Tags and certification- https://handicrafts.nic.in/CmsUpload/12222017102212GI%20BOOK%20FINAL%202-5-17_resized.pdf
- GI tagged Indian textiles-https://www.usthadian.com/gi-tagged-indian-textiles-driving-heritage-and-artisan-growth/

UNIT II

Indian shawls showcase rich cultural diversity and artisanal expertise. This unit explores shawls from across India - Himachal Pradesh (Kinnauri, Kullu), Kashmir (Kanikar, Amlikar), and Northeast India, highlighting unique materials, techniques, and designs that reflect tradition and regional identity.

- Irwin, J, 1954, Shawls - A study in Indo European Influences, London
- Jaitley,J, ed 1990, Crafts of Jammu, Kashmir and Ladakh, Mapin Publishing, Ahmedabad
- Rizvi, J., & Ahmed, M. (2017). Pashmina: The Kashmir shawl and beyond (Second revised edition). Marg Foundation.
- Roy, S. K. (2007). Textile traditions of Northeast India. Agam Kala Prakashan.
- Jaitly, J. (2012). Crafts atlas of India (2012 ed., 464 pp.). Niyogi Books. (ISBN: 978-8189738372)
- Sharma, N et al 2008, Traditional handicrafts and handlooms of Kullu district, HP., Indian Journal of Traditional Knowledge, Vol 7 (1), Jan pp56-61
- Ames, Frank 1986, The Kashmir Shawl, Antique Collections, Woodbridge
- Kullu shawls - https://www.researchgate.net/profile/Anju-Kapoor-3/publication/363921343_Traditional_Handicrafts_and_Handloom_of_Kullu_district_Hi

machal_Pradesh/links/6447e4c7d749e4340e383238/Traditional-Handicrafts-and-Handloom-of-Kullu-district-Himachal-Pradesh.pdf?origin=scientificContributions

- Kanikar Shawls - https://www.researchgate.net/profile/Veenus-Jain/publication/332801594_Kani_Shawl_A_Case_Study_of_a_Milestone_in_the_Art_of_Weaving/links/5ccbc2bb92851c3c2f818f79/Kani-Shawl-A-Case-Study-of-a-Milestone-in-the-Art-of-Weaving.pdf?origin=publication_detail&_tp=eyJjb250ZXh0Ijp7ImZpcnN0UGFnZSI6InB1YmxpY2F0aW9uIiwicGFnZSI6InB1YmxpY2F0aW9uRG93bmxvYWQiLCJwcmV2aW91c1BhZ2UiOiJwdWJsaWNhdGlvbiJ9fQ

UNIT III

Indian carpets and floor coverings are renowned for their beauty and diversity, reflecting the country's rich textile heritage. This unit explores the distinctive world of hand-knotted carpets, Bhutia carpets, Namda and Gabba from Kashmir, and Durries like Panja durri from Punjab and Haryana, and Chindi durri, highlighting their unique production techniques, designs, and colours that showcase regional craftsmanship and tradition.

- Mathur, A. (2004). Indian carpets: A hand-knotted heritage (Hardcover ed., 96 pp.). Rupa Publication Pvt. Ltd. (ISBN: 8129103095)
- Pande, P. (2024). Floor coverings from Kashmir: Kaleen carpets, namdah, gabba, ari rugs and wagoo mats (1st ed., 236 pp.). Niyogi Books.
- Chattopadhyay K. D. 2018, Indian Carpets and Floor Coverings, All India Handicrafts Board Digitised version https://archive.org/details/indiancarpetsflo00chat
- Namda - https://gaatha.org/Craft-of-India/namda-craft-detail-research/
- Namda Art of Kashmir- https://oaklores.com/2024/12/06/namda-art-of-kashmir-reviving-the-heritage-of-handcrafted-rugs/
- Gabba making - https://poonchwoolenandhandicraftservices.wordpress.com/best-woolen-services-in-poonch/gabba-making-in-valley-of-poonch/
- Panja Durries - https://www.ijcmas.com/8-2-2019/Saroj%20Yadav%20and%20Neelam%20M.%20Rose.pdf
- Patterns and symbols of Panda Durries https://oaklores.com/2024/12/16/traditional-patterns-and-symbols-in-punjabi-durries/

UNIT IV

India's embroidered and painted textiles showcase rich artistic heritage. This unit explores embroideries (Chamba Rumal, Zardozi, Suf, etc.), appliqué work (Pipli, Gotta Patti), and painted textiles (Pichwai, Phad, Thankga, Mata ni Pachedi), highlighting unique techniques, motifs, and colours that make each textile a masterpiece.

- Jhulka, Anu 2019, Nathdwara Pichwais: The paintings of Lord Krishna, Blue Rose Publisher

- Mohanty, B.N, 1980, Applique craft of Orissa, Alfred Buhler ed, Calico museum of textiles (Digitised 2009)
- Thankha Paintings - The Process of Thangka Painting https://artsandculture.google.com/story/the-process-of-thangka-painting-dastkari-haat-samiti/-QWh8YagYf4tIQ
- Karolia, Anjali, 2019, Traditional Indian Handcrafted Textiles, Niyogi Publishers
- How Mata ni Pachedi is Created https://artsandculture.google.com/story/how-mata-ni-pachedi-is-created-dastkari-haat-samiti/4wWx_aQVxaGXJQ
- Phad Paintings - https://www.artisera.com/blogs/expressions/phad-paintings-of-rajasthan
- Naik, Shailja 1996, Traditional Embroideries of India, APH Publishing

Suggested Readings

- Annual Report, (2002-2003), Handloom Industry, Ministry of textiles, Chapter 5, pg 1-20
- Chelna Desai, 1988, Ikats Textiles of india, Chronicle Books, India
- Ghosh, G.K 2000, Ikat Textiles of India New Apron, New Delhi
- Handa, O.C. (1998). Textiles, Costumes and Ornaments of the Western Himalayan. Indus Publishing.
- Jayakar, Pupul 1979, Homage to Kalamkari, Marg Publishing, Bombay
- Mausumi Kar, (2015), The Indian Textile and Clothing Industry An Economic Analysis, Springer New Delhi Heidelberg New York Dordrecht London, Chapter 1& 2, pg 12-33.
- Pandit Savitri, 1951, Indian Embroidery- Its Variegated Charm, Pandit Publisher, Baroda Embroidery tutorials, video links of woven textiles and slide share
- Carpet weaving Traditions - https://www.granthaalayahpublication.org/journals/granthaalayah/article/download/IJRG19_ARTS11_08/794/4631
- Craft Documentaries on YouTube

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

-

DISCIPLINE SPECIFIC ELECTIVE COURSE
ADVANCED TEXTILE COLOURATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Advanced Textile Colouration	4	2	0	2	As per admission criteria	Introductory Course in Dyeing and Printing

Learning Objectives

- To gain knowledge about the new developments in dyeing and printing
- To understand the environmental issues related with dyeing and printing
- To understand the concept of colour and its measurement

Learning Outcomes

The students would be able to:

- Identify and describe different dyeing machines.
- Describe the innovative methods of printing
- Explain certifications and standards related to dyeing and printing of textiles.
- Objectively measure and analyse the colour of dyed and printed textiles

THEORY
(Credits 2; Hours 30)

UNIT I: Dyeing **12 Hours**

This unit lays thrust on the dyeing machines used at different stages of dyeing and latest developments in dyes and dyeing technology.

- Dyeing machines
- Mass colouration
- Dyeing of blends
- New developments in dyes: Thermochromic dyes, Photochromic dyes, Bio dyes, etc.

UNIT II: Printing **8 Hours**

This unit highlights various new methods and styles of printing.

- New developments in printing- Digital printing, Ink-jet printing, Flock printing, Foil printing, 3-D printing, etc.
- Printing with Natural dyes: Traditional styles and new developments

UNIT III: Ecological Concerns in Dyeing and Printing **5 Hours**

This unit highlights the impact of dyeing and printing on the environment and various eco-friendly products and processes.

- Environmental impacts of dyeing and printing
- Eco-friendly processes and products: Low water and low energy intensive dyeing methods (Ultrasonic dyeing, Foam dyeing, Supercritical CO_2 dyeing, etc.)
- Certifications and standards in dyeing and printing

UNIT IV: Colour Measurement **5 Hours**

This unit deals with the dimensions of colours and its measurement.

- Colour theory: hue, value, intensity
- Principles of colour measurement: Optical density, K/S, CIE-L*c*h*, CIE-L*a*b*
- Metamerism

PRACTICAL
(Credits 2; Hours 60)

- Dyeing of different substrates with natural dyes
- Printing with natural dyes
- Dyeing and printing of blends
- Printing on silk and wool
- Discharge on reactive grounds
- Discharge printing on silk with acid ground
- Transfer Printing
- Colour measurement

Essential Readings

UNIT I

This unit explains the requirements of dyeing machine. It includes different types of machines used for dyeing at various stages of dyeing. It also deals with the concept of mass colouration and is importance. Dyeing of important blends will also be dealt with. In addition, new developments in dyeing will be explained.

- Aspland, J. R. (1997). *Textile dyeing and colouration*. AATCC.
- Chakraborty, J. N. (2014). *Fundamentals and practices in colouration of textiles* (2nd ed.). Woodhead Publishing India Pvt. Ltd.
- Rastogi, D., & Chopra, S. (Eds.). (2017). *Textile science*. Orient Black Swan Publishing Limited.
- Sekhri, S. (2022). *Textbook of fabric science: Fundamentals to finishing* (4th ed.). PHI Learning Pvt. Ltd.
- Trotman, E. R. (1984). *Dyeing and chemical technology of fibres* (6th ed.). Charles Griffin and Company Ltd.
- सेख़% सीमा (2022), aw ि ay7v, PHI Learning Pvt. Ltd. Delhi

UNIT II

This unit includes developments and advancements in textile printing such as digital printing, ink jet printing, 3D printing etc. This unit further discusses printing with natural dyes.

- Clarke, W. (1977). *An introduction to textile printing*. Butterworth and Co. Ltd.
- Kolanjikombil, M. (2023). *Printing of textile substrates: Machineries and methods* (Vol. 1). Woodhead Publishing.
- Mahapatra, N. N. (2022). *Textile printing*. Woodhead Publishing India.
- Miles, L. W. C. (1994). *Textile printing* (2nd ed.). Society of Dyers and Colorists.
- Shenai, V. A. (1979). *Technology of textile processing: Technology of printing* (2nd ed.). Sevak Publications.
- Shore, J. (Ed.). (1990). *Colorants and auxiliaries: Organic chemistry and application properties* (Vols. 1–2). Society of Dyers and Colorists.

UNIT III

In this unit students will be familiarised with the impact of various chemicals and methods used for dyeing and printing on the environment. Developments towards eco-friendly dyeing and printing will be dealt with.

- Bhatia, S. C., Mangla, P., & Devraj, S. **(2020).** *Energy conservation in textile industry*. Woodhead Publishing India.
- Mahapatra, N. N. **(2015).** *Textiles and environment*. Woodhead Publishing India Pvt. Ltd.

UNIT IV

Fundamental concepts of colour and its measurement will be explained. The students will learn the use of colour measurement in the Textile industry.

- Gulrajani, M. L. (Ed.). (2010). *Colour measurement: Principles, advances and industrial applications*. Woodhead Publishing.
- Shah, H. S., & Gandhi, R. S. (1990). *Instrumental colour measurement and computer*

aided colour matching for textiles. Mahajan Book Publication.

Suggested Readings

- Gulrajani, M. L. (2012). Colour specification and visual approval methods for textiles. In M. L. Gulrajani (Ed.), *Colour design: Theories and applications* (pp. 271–294). Woodhead Publishing.
- Kuehni, R. G. (1975). *Computer colorant formulation*. Lexington Books.
- Park, J. (1993). *Instrumental colour formulation: A practical guide*. Woodhead Publishing.
- Shah, H. S., & Gandhi, R. S. (1990). *Instrumental colour measurement and computer aided colour matching for textiles*. Mahajan Book Publication.
- Textile Institute / Elsevier. (2014). *Principles of colour and appearance measurement*. Woodhead Publishing Series in Textiles.
- Sule, A. D. (2002). *Computer colour analysis*. New Age International Publishers.

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

Research Methodology Courses

ADVANCED RESEARCH METHODOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre- requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Advanced Research Methodology	2	2	0	0	As per admission criteria	Should have studied Basic Research Methodology and Statistics

Learning Objectives

- Construct a theoretical framework for diverse research problems.
- Compare and contrast the design elements of experimental, quasi-experimental, and non-experimental studies.
- Formulate appropriate research questions for a mixed-methods design.

Learning Outcomes

After completing the course, students will be able to:

- Design complex research projects, including mixed-methods and longitudinal studies, appropriate for advanced academic inquiry.
- Determine the internal and external validity of research designs.
- Evaluate and justify the selection of advanced sampling techniques.

THEORY
(Credits 2; Hours 30)

UNIT I: Theoretical Foundation of Research Design and Sampling. 12 Hours

This unit covers the theoretical foundation of research designs, issues of internal and external validity, advanced literature review techniques including systematic reviews and meta-analysis, and approaches to theory building through inductive, deductive, and abductive reasoning. The unit also discusses sophisticated sampling techniques, sample size determination, and sources of sampling error, enabling learners to design rigorous and generalizable research studies.

- Types of research designs and internal external validity perspectives
- Literature Review Approaches: Systematic Review, Meta Analysis, scoping review and others
- Theory Building and testing in qualitative and quantitative researches
- Sampling Frameworks and strategy, Sample size calculation and error
- Advanced Quantitative Sampling Techniques: Stratified Cluster Sampling, Multi-Stage Sampling, Adaptive Sampling and other techniques.
- Sampling in qualitative research: Techniques and issues of depth, context and data saturation

UNIT II: Quantitative, Qualitative and Mixed Methods Research Design. 18 Hours

This unit focuses on the different types of research designs including, advanced quantitative research designs, key qualitative research methodologies and mixed-methods research designs and strategies for integrating qualitative and quantitative data.

- Quantitative Research Design
    - Advanced Experimental Designs: RCT Designs, Factorial designs, Repeated Measures (within-subjects),
    - Longitudinal Studies: Panel, Cohort, and Trend designs
    - Cross-Sectional: Survey and other quantitative designs.
- Qualitative Methodologies
    - Aspects of robust Qualitative research designs.
    - Iteration, Data Triangulation,Saturation and Reflexivity in qualitative research
    - Ethnographic Research, Case Study Research, Narrative Inquiry
    - Action and Participatory Researches: philosophical and methological perspectives

- Mixed-Methods Design
    - Convergent Parallel, Explanatory Sequential, Exploratory Sequential designs; Notation systems (e.g., QUAL to QUAN)
    - Integration and Mixing: Strategies for data mixing, synthesis, and developing a unified interpretation.

Essential Readings

UNIT I

This unit introduces the perspectives that guide advanced research practices. Students will study different types of research designs, key issues of validity, advanced literature review methods, and approaches to theory development. The unit also covers details of sampling for research. The unit aims to strengthen students' conceptual clarity and ability to link theory, methodology, and research questions in scholarly inquiry.

- Black, J. A., & Champion, D. J. (1976). *Methods and issues in social research*. John

Wiley & Sons
- Burns, Robert, B. (2000) *Introduction to Research Methods*(4th ed.,chaps8-10, 20-22, 29,30). Sage Publications
- Kothari, C.R., Garg, Gaurav (2023) *Research Methodology: Methods and Techniques*
- (5th ed.) New Age International Publishers
- Mandlik, D., Kalkar, P., Singh C. (2025) *Advanced Research Methodologies and Practices*. Taylor & Francis.
- Mallik, R., Kurian, M., Prajapati, V., Pithadia, M. (2023) *Advanced Research Methodology*. AG Publishing House
- Neuman, W. Laurence (2008) Social Research Methods: Qualitative and Quantitative Approaches (6th ed., chaps3-5) Pearson Education

UNIT II

This unit focuses on advanced quantitative research designs including experimental, longitudinal, and cross-sectional designs. Emphasis is placed on understanding complex experimental structures and multivariate approaches. Through this unit, students will also develop an understanding of advanced qualitative research approaches such as ethnographic, case study, narrative, and participatory research designs, focusing on their key features and applications. The unit will further discuss mixed-methods research designs that integrate quantitative and qualitative approaches. Students will examine different mixed-methods designs and strategies for integrating data during analysis and interpretation.

- Baumeister, M., Kropf, S., & Pöpper, C. (2022). Quantile-based MANOVA: A new tool for inferring multivariate data in factorial designs. *arXiv preprint arXiv:2211.15484*. https://doi.org/10.48550/arXiv.2211.15484
- Black, J. A., & Champion, D. J. (1976). *Methods and issues in social research*. John Wiley & Sons
- Burns, Robert, B. (2000) *Introduction to Research Methods*(4th ed.,chaps8-10, 20-22, 29,30). Sage Publications
- Caruana, E. J., Roman, M., Hernández-Sánchez, J., & Solli, P. (2015). Longitudinal studies. *Journal of Thoracic Disease*, *7*(11), E537–E540. https://doi.org/10.3978/j.issn.2072-1439.2015.10.63
- Creswell, J. W., & Creswell, J. D. (2023). *Research design: Qualitative, quantitative, and mixed methods approaches* (6th ed.). SAGE Publications, Inc.
- Denzin, N. K., Lincoln, Y. S., Giardina, M. D., & Cannella, G. S. (Eds.). (2024). *The SAGE handbook of qualitative research* (6th ed.). SAGE Publications
- Kerlinger, F. N. (1973). *Foundations of Behavioral research* (2nd ed., chaps 7,8, 17- 26). Holt, Rinehart, and Winston.
- Kothari, C.R., Garg, Gaurav (2023) *Research Methodology: Methods and Techniques* (5th ed.) New Age International Publishers
- Luthfiandana, R., Santioso, L. L., Febrian, W. D., Soehaditama, J. P., & Sani, I. (2024). Qualitative research concepts: Phenomenology, grounded theory,

ethnography, case study, narrative. *Scientia Journal of Applied Management*, *2*(1), 26–36. https://doi.org/10.38035/sjam

- Minc, S. D., Chandanabhumma, P. P., Sedney, C. L., Haggerty, T. S., Davidov, D. M., & Pollini, R. A. (2022). Mixed methods research: A primer for the vascular surgeon. *Seminars in Vascular Surgery*, *35*(4), 447–455. https://doi.org/10.1053/j.semvascsurg.2022.09.003
- Neuman, W. Laurence (2008) Social Research Methods: Qualitative and Quantitative Approaches (6th ed., chap 13) Pearson Education
- Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in implementation research. *Administration and Policy in Mental Health and Mental Health Services Research*, *42*(5), 533–544. https://doi.org/10.1007/s10488-013-0528- y

Suggested Readings

- Dagher, D., & Khan, M. (2025). Writing a systematic review and meta-analysis: A step-by-step guide. *Sports Health*, *17*(5), 885–890. https://doi.org/10.1177/19417381251364686
- M. E. R. (2020). Methodological integrity in critical qualitative research. *The Counseling Psychologist*, *48*(6), 848–874. https://doi.org/10.1177/0011000020950348
- Findley, M. G., & Faten, A. (2024). Vulnerability in research ethics: A call for assessing vulnerability and implementing protections. *Proceedings of the National Academy of Sciences*, *121*(11), https://doi.org/10.1073/pnas.2322821121

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

TOOLS FOR RESEARCH

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Tools for Research	2	2	0	0	As per admission criteria	Nil

Learning Objectives

- Design and evaluate quantitative and qualitative tools.
- Understand data processing and effectively utilize common statistical packages.
- Apply coding techniques, and utilize digital platforms and AI in research design and analysis.

Learning Outcomes

After completing the course, students will be able to:

- Differentiate between major quantitative and qualitative tools.
- Demonstrate proficiency in data entry, coding and cleaning.
- Utilize digital platforms and AI effectively in the formulation, administration, and data collection.
- Proficiently utilize specialized software for qualitative data analysis and quantitative statistical testing.

THEORY
(Credits 2; Hours 30)

UNIT I: Quantitative Tools, Data Coding and Analysis 15 Hours

This unit introduces quantitative research tools, including questionnaires and rating scales, and the principles of their development, reliability, and validity. It covers major rating scales and key steps in scale construction, analysis, and standardization, along with the use of digital platforms and AI for tool development and administration. This unit also focuses on quantitative data coding, entry, and cleaning using statistical software. It introduces variable definition, handling of missing data, basic automation through spreadsheet and open-source tools, and familiarization with commonly used statistical software for data management and analysis.

- Quantitative measurement, Variables and construct definition
- Quantitative tool development: Questionnaire, Semi-Structured Interview Schedules.
- Rating Scales Types and Development Process: Item Generation and Content Validation, Item Analysis, Internal Consistency and Factor Analysis, Scale Refinement and Standardization.
- Coding styles and Approaches.
- Assessment of Reliability and Validity of quantitative Tools.
- Data Coding, Entry and Cleaning (Statistical Software): Handling missing data (listwise/pairwise deletion).
- Automation and Data Scripting: Advance excel, other open-source software for data import/export.
- Statistical Software Usage: Navigating common statistical packages
- Leveraging Digital Tools and AI for enhancing the Research lifecycle: Tool Formulation, Data collection and Analysis

UNIT II: Qualitative Tools, Data Coding and Analysis **15 Hours**

This unit introduces major qualitative research tools and their application in research. It covers the development and validation of qualitative tools, descriptive and thematic coding techniques, and the use of digital platforms and AI for qualitative data collection and analysis. This unit further focuses on qualitative data coding and analysis using qualitative data analysis software. It introduces the interface and use of QDAS for importing, coding, cleaning, and managing text, audio, and video data, along with an overview of NVivo, ATLAS.ti, and other open-source tools.

- Qualitative tools: In-Depth Interview, Focus Group Discussion, Case Study, Observation, Diaries, Oral Narratives/Stories and others.
- Participatory tools : Types, characteristics and usage in qualitative and participatory researches.
- Developing Qualitative Tools: Tool selection and development, pilot testing and refinement.
- Validity of Qualitative Tools: Qualitative vs. Quantitative Validity, Methods for establishing validity for qualitative tools.
- Coding Techniques: Descriptive and thematic coding
- Digital Platforms and AI for development of qualitative tools and data analysis.
- Qualitative Data Analysis Software (QDAS) Interface: Importing, coding and cleaning different data types (text, audio, video)
- Overview of NVivo, ATLAS.ti and other open-source QDAS software

Essential Readings

UNIT I

This unit aims to build an understanding of quantitative tools used for the purpose of data

collection. The unit introduces various types of quantitative data tools, their development and assessment of their reliability and validity. This unit further introduces various rating scales and their development, validation and standardisation. The unit also includes the learning of coding and analysis of quantitative data, basics of data processing scripts and common statistical packages

- Creswell, J. W., & Creswell, J. D. (2023). *Research design: Qualitative, quantitative, and mixed methods approaches* (6th ed.). SAGE Publications.
- Cheema, J. R. (2014). Using listwise deletion to cope with missing data: A cautionary note. *Journal of Educational and Developmental Psychology, 4*(1), 127–134.
- Ghasemi, A., & Zahediasl, S. (2012). Normality tests for statistical analysis. *International Journal of Endocrinology and Metabolism, 10*(2), 486–489.
- Gotschall, T., & Gotschall, T. (2018). EndNote, Mendeley, RefWorks, Zotero: A comparative review. *Journal of Electronic Resources in Medical Libraries, 15*(1), 1–18.
- Hausner, E. T., & Hirt, S. J. (2020). Improving reproducibility in academic data-intensive research through computational workflows. *Frontiers in Research Metrics and Analytics, 5*(7).
- Johnson, R., & Witsel, M. (2018). ORCID: A necessary piece of infrastructure for global research evaluation. *Frontiers in Research Metrics and Analytics, 3*(28).

UNIT II

This unit introduces various types of qualitative tools used in research, their development, pilot testing and refinement. The unit also introduces techniques of establishing validity and of such qualitative tools of data collection. This section also discusses prominent digital and AI tools for qualitative research and provides an overview of qualitative data coding and analysis software.

- Allsop, D. B., Chelladurai, J. M., Kimball, E. R., Marks, L. D., & Hendricks, J. J. (2022). Qualitative methods with NVivo software: A practical guide for analyzing qualitative data. Psych, 4(2), 142–159.
- Al-Kassimi, M., & Al-Sharqi, A. (2020). Data visualization techniques: Model and taxonomy. International Journal of Research in Engineering and Science, 8(3), 44–53.
- Creswell, J. W., & Creswell, J. D. (2023). *Research design: Qualitative, quantitative, and mixed methods approaches* (6th ed.). SAGE Publications.
- Gotschall, T., & Gotschall, T. (2018). EndNote, Mendeley, RefWorks, Zotero: A comparative review. *Journal of Electronic Resources in Medical Libraries, 15*(1), 1–18.
- Johnson, R., & Witsel, M. (2018). ORCID: A necessary piece of infrastructure for global research evaluation. *Frontiers in Research Metrics and Analytics, 3*(28).
- Provalis Research. (n.d.). QDA Miner: Qualitative Data Analysis Software. Retrieved from https://provalisresearch.com/products/qualitative-data-analysis-software/
- Urban Institute. (2025). Urban Institute Data Visualization Style Guide. Retrieved from

http://urbaninstitute.github.io/graphics-styleguide/
- Weninger, M. (2024). Open coding in qualitative research: A systematic review and guide. *ResearchGate* (preprint).

Suggested Readings:

- Kang, H. (2013). The prevention and handling of the missing data. *Korean Journal of Anesthesiology, 64*(5), 402–406.
- Kery, M., & Myers, M. (2020). Improving reproducibility in academic data-intensive research through computational workflows. *Frontiers in Research Metrics and Analytics, 5*(7).
- Saravanakumar, A. P., & Shitharth, S. (2023). A survey on sentiment analysis: Techniques, algorithms, and application areas. *Journal of King Saud University – Computer and Information Sciences, 35*(3).
- Takes, F. W. (2024). Gephi tutorial for graph/network visualization. Retrieved from https://github.com/franktakes/gephi-tutorial

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

TECHNIQUES OF RESEARCH WRITING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course
		Lecture	Tutorial	Practical		
Techniques of Research Writing	2	2	0	0	As per admission policy	Should have studied Advanced Research Methodology and Tools for Research

Learning Objectives

- Comprehend and apply principles of academic writing for research
- Understand the concept of plagiarism and adopt strategies to avoid plagiarism.
- Learn and use different citation styles and effectively utilize reference management tools.
- Outline the process of writing, publishing, and presenting research.
- Avoid common errors in academic writing.

Learning Outcomes

After completing the course, students will be able to:

- Structure and organize major scholarly works according to disciplinary standards.
- Master the principles of academic writing and non-plagiaristic expression.
- Employ visualization techniques to effectively communicate complex research findings and data patterns.
- Apply citation styles and formatting requirements meticulously to produce publication-ready manuscripts.

THEORY
(Credits 2; Hours 30)

UNIT I: The Foundations and Structure of a Research Manuscript 18 Hours

This unit covers the essentials of clear, concise, and formal academic writing, ethical practices including plagiarism avoidance, effective idea organization, and responsible use of AI tools in research. This unit also guides students through crafting a complete research manuscript, including introduction, methodology, results, discussion, and conclusions, with emphasis on accurate data presentation, visualization, and proper manuscript formatting.

- Academic Writing principles and organization of ideas
- Plagiarism types, use of plagiarism-checking software & interpretation of plagiarism reports.
- Academic writing frameworks: IMRAD (Introduction, Methods, Results, Discussions) Structure and the TEEC (Topic sentence, Evidence, Explanation, Conclusion) Structure
- Ethical use of AI in academic writing
- Data Visualization: Principles, Types and Tools

UNIT II: Citation, Reference Management, Publication and Presentation of Research
12 Hours

The unit focuses on mastering citation styles, managing references using software tools, and conducting efficient literature searches using databases and advanced search strategies. The unit further explores journal selection, ethical publishing practices, research paper writing, and the creation and delivery of effective presentations and posters for diverse academic audiences.

- Citation Management & formatting guidelines: Detailed application of specific styles (e.g., APA 7th, MLA, Chicago, Vancouver), managing in-text citations, citation index.
- Reference Management Software (RMS): Zotero, Mendeley and other citation tools; searching specialized databases (e.g., Scopus, Web of Science, ScienceDirect);
- Databases and Search Strategy- Key search terms, Boolean operators, PRISMA diagram
- Types and Selection of Journals: Predatory journals, Cloned journals; Open access and Paid Journals; Impact Factor and other metrics of Journals
- Research Paper writing and publishing in peer-reviewed journals, understanding journal-specific guidelines.
- Formulating and Presenting a Research Poster
- Presentation Skills: Creating effective slides, summarizing complex findings for different audiences, and managing Q&A sessions.

Essential Readings:

UNIT I

This unit introduces the essential principles of scholarly writing required for academic research. It focuses on developing clarity, precision, and coherence in written work while maintaining an appropriate academic tone. This unit also familiarizes students with accurate citation practices and systematic reference management in academic writing. Further, the unit covers the correct presentation of tables, figures, and overall manuscript formatting in line with journal and institutional requirements. Students will gain practical skills necessary for producing professionally structured research documents.

- American Psychological Association. (2020). *Plagiarism* (7th ed.). APA Style.

https://apastyle.apa.org/style-grammar-guidelines/citations/plagiarism
- American Psychological Association. (2020). *Sample tables* (7th ed.). APA Style. https://apastyle.apa.org/style-grammar-guidelines/tables- figures/sample-tables
- American Psychological Association. (2023). *Citing generative AI in APA Style: Part 1—Reference formats*. APA Style Blog. https://apastyle.apa.org/blog/cite-generative-ai-references
- Thomas, C. George (2021) Research Methodology and Scientific Writing (2nd ed.) Springer Nature

UNIT II

This unit focuses on the organization and presentation of a complete research report/document. Students will learn how to write each section of a research manuscript clearly and logically. The unit focusses on the processes involved in publishing and presenting research work. It covers the selection of appropriate journals, awareness of unethical publishing practices, the basics of writing for peer-reviewed publications, effective research presentation skills, including poster preparation and oral presentations

- American Psychological Association. (2020). *Response to reviewers* (7th ed.). APA Style. https://apastyle.apa.org/style-grammar-guidelines/research-publication/response-reviewers
- American Psychological Association. (2020). *Heading levels* (7th ed.). APA Style. https://apastyle.apa.org/style-grammar-guidelines/paper- format/heading-levels
- Hamilton College. (n.d.). *How to write an APA research paper*. https://www.hamilton.edu/academics/centers/writing/writing-resources/how-to-write-an-apa-research-paper
- Montclair State University. (2021). *How to prepare your dissertation in APA Style*. https://www.montclair.edu/graduate/wp-content/uploads/sites/58/2021/01/DISSERTATION-GUIDELINES-FOR-APA-STYLE-1-2021.pdf
- Tullu, M. S., & Karande, S. (2017). *Writing a model research paper: A roadmap*. *Journal of Postgraduate Medicine*, *63*(3), 143–146. https://doi.org/10.4103/jpgm.JPGM_325_17

Suggested Readings:

- AME Publishing Company. (2022). *Discussion and conclusion*. https://cdn.amegroups.cn/journals/vats/files/journals/27/articles/4955/public/4955-PB1-8866-R1.pdf?filename=amj-04-26.pdf
- McLeod, S. (2023). *How to write a methods section for a psychology paper*. Very well Mind. https://www.verywellmind.com/how-to-write-a-method- section-2795726

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

Annexure-8

UNIVERSITY OF DELHI

Department of Home Science

Faculty of Science

1-Year M.Sc. Fabric & Apparel Science

Coursework Track

Department of Home Science

University of Delhi

Course Credit Structure- NEP

2025

The Department of Home Science offers a 1-year master's programme in Fabric & Apparel Science. The programme equips the students with an understanding of design and technology in Fabric and Apparel along with an appreciation of our rich textile culture. The programme strives to build a cadre of professionals in the area of Fabric and Apparel Science. The courses are pitched at providing a strong theoretical base along with skill enhancement through hands-on training. The course aims to provide knowledge of the latest technological advances in textile and apparel sector as well as sensitize students towards the rich textile heritage, crafts and community. The curriculum provides experiential training to students for professional and career readiness with the right skill set needed in a competitive market scenario.

Programme Specific Objectives:

- To equip students with in-depth theoretical knowledge and analytical skills necessary to excel in the fields of fibre science, textile chemistry, apparel technology, sustainability, and fashion systems.
- To develop students' ability to conduct independent and collaborative research, address industry-related challenges, and contribute new knowledge to textile science and apparel technology.
- To encourage learners to integrate sustainable, ethical, and environmentally conscious approaches across textile production, fashion processes, and consumer practices.
- To cultivate respect for traditional textiles, craftsmanship, and cultural heritage, while equipping students with the skills for documentation, preservation, and conservation.
- To prepare graduates for leadership roles in academia, research organizations, textile and apparel industries, quality testing labs, conservation units, and entrepreneurial ventures.
- To enable students to engage with contemporary industrial practices, technological advancements, and global trends through internships, collaborations, and hands-on training.
- To encourage students to apply their expertise in ways that support the textile sector's growth, promote innovation, empower communities, and strengthen India's position in the global textile and fashion domain.

Programme Specific Outcomes:

The post graduate program in the Department of Fabric and Apparel Science, strives to educate and train students to enable them to:

- Demonstrate awareness of contemporary trends, technological innovations, and emerging developments in textiles and apparel, and apply this understanding to research and professional practice.
- Critically analyse and implement sustainable processes and practices across the textile and fashion value chain, promoting environmental responsibility and ethical decision-making.
- Preserve and conserve traditional and heritage textiles, using scientific methods and culturally informed approaches, blending traditional craftsmanship and modern innovation
- Develop a comprehensive understanding of the fundamentals of design concepts and an ability to think critically and creatively

- Understand the fashion industry ecosystem, including design thinking, product development, branding, and retail operations.
- Apply creative, managerial, and technical competencies to pursue diverse careers in academia, industry, research, and entrepreneurship within the textile, fashion, and allied sectors.
- Engage in research, innovation, and development activities that contribute to national growth, industry advancement, and societal well-being.

Program Structure 1: M.Sc. Only Coursework

Semester	Core Courses		Elective Courses		Skill Based Courses		Total Credits
	No. of Courses	Total Credits	No. of Courses	Total Credits	No. of Courses	Total Credits	
I	2	8	3	12	1	2	**22**
II	2	8	3	12	1	2	**22**
Total Credits for the Course	**16**		**24**		**4**		**44**

List of PGCF courses of M.Sc. Fabric and Apparel Science

(Semester I and II of the One-year Programme: COURSEWORK ONLY)

List of Courses to be offered to students opting for Structure-1 (Coursework) of M.Sc. in 1st and 2nd Semester of One- year course							
Type of Course	Course No.	Semester	Course Title	Credits for each Course			
				Theory	Tutorial	Practical	Total
SEMESTER I							
Discipline Specific Core Course	DSC 1	I	Advanced Textile Science	3	1	0	4
Discipline Specific Core Course	DSC 2	I	Advanced Garment Design and Construction	2	0	2	4
Discipline Specific Elective Course	DSE 1	I	**From the pool of DSEs given below:** i. Textile Design Development ii. Global Couture iii. Fashion Marketing iv. Statistics and Data Management	As per the specific course			4
Discipline Specific Elective Course	DSE 2	I		As per the specific course			4
Discipline Specific Elective Course	DSE 3	I		As per the specific course			4
General Elective Course (*Can be opted for in place 1 DSE course)	GE 1	I	From the pool of GEs	As per the specific course			4
Skill Based Course	SBC 1	I	**From the pool of SBCs given below** i. Fashion Illustration: Techniques and Application ii. Surface Design Techniques iii. Community Outreach in Textiles and Apparel Sector iv. Internship	0	0	2	2
SEMESTER II							
Discipline Specific Core Course	DSC 3	II	Indian Handcrafted Textiles	3	0	1	4
Discipline Specific Core Course	DSC 4	II	Advanced Dyeing and Printing	2	0	2	4
Discipline Specific Elective Course	DSE 4	II	**From the pool of DSEs given below:** i. Commercial Fabrics ii. Women's Wear: Concept to Creation iii. Technical Textiles	As per the specific course			4
Discipline Specific Elective Course	DSE 5	II		As per the specific course			4

Discipline Specific Elective Course	DSE 6	II	iv. Psychology of Fashion v. History of Fashion	As per the specific course			4
General Elective Course (*Can be opted for in place 1 DSE course)	GE 2	II	From the pool of GEs	As per the specific course			4
Skill Based Course	SBC 2	II	**From the pool of SBCs given below:** i. Advanced Computer Aided Design ii. Fashion Styling iii. Internship	0	0	2	2

Pool of Discipline Specific Elective Courses offered in Semester I				
	Credits for each Course			
	Theory	Tutorial	Practical	Total
i. Textile Design Development	1	0	3	4
ii. Global Couture	3	1	0	4
iii. Fashion Marketing	3	0	1	4
iv. Statistics and Data Management	3	0	1	4
Pool of Discipline Specific Elective Courses offered in Semester II				
	Credits for each Course			
	Theory	Tutorial	Practical	Total
v. Commercial Fabrics	3	1	0	4
vi. Women's Wear: Concept to Creation	2	0	2	4
vii. Technical Textiles	3	1	0	4
viii. Psychology of Fashion	3	1	0	4
ix. History of Fashion	3	1	0	4
Pool of General Elective Courses offered by the Department of Home Science				
	Credits for each Course			
	Theory	Tutorial	Practical	Total
i. Parenting in Contemporary India	3	1	0	4
ii. Resources and Sustainability	3	1	0	4
iii. Organisational Communication: Tools and Techniques	3	1	0	4
iv. Lifestyle Modifications for Optimal Health	3	1	0	4
v. Community Nutrition Assessment	3	1	0	4
vi. Dyeing and Printing with Natural Dyes	3	0	1	4
vii. Appreciation of Indian Textiles	3	1	0	4

Pool of Skill Based Courses offered in Semester I					
		Credits for each Course			
		Theory	Tutorial	Practical	Total
i.	Fashion Illustration: Techniques and Application	0	0	2	2
ii.	Surface Design Techniques	0	0	2	2
iii.	Community Outreach in Textiles and Apparel Sector	0	0	2	2
iv.	Internship	0	0	2	2
Pool of Skill Based Courses offered in Semester II					
		Credits for each Course			
		Theory	Tutorial	Practical	Total
v.	Advanced Computer Aided Design	0	0	2	2
vi.	Fashion Styling	0	0	2	2
vii.	Internship	0	0	2	2

Discipline Specific Core Courses

DISCIPLINE SPECIFIC CORE COURSE
ADVANCED TEXTILE SCIENCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Advanced Textile Science	4	3	1	0	As per admission criteria	Nil

Learning Objectives

- To provide students with the knowledge of the structure, production and properties of natural and synthetic fibres.
- To familiarize them with the various yarn and fabric production techniques.
- To learn about the various standards, quality marks and labels in textiles and to understand the process of assurance of quality in textiles.

Learning Outcomes

Students will be able to:

- Understand the structure and production techniques of various natural and manmade fibers and their physical properties.
- Identify and explain the various conventional and non-conventional techniques of yarn spinning.
- Demonstrate an understanding of various types of fabric forming methods.
- Gain knowledge about quality parameters for fibre, yarn and fabrics.
- Develop understanding of standards and regulations and quality control organization.
- Acquire skills to inspect, manage and control quality in the textile industry.

THEORY
(Credits 3; Hours 45)

UNIT I: Fibre: Chemistry, Morphology, Production and Properties — 18 Hours

In this unit, the students will learn about the chemical composition, morphology, chemical and physical properties of selected textile fibres.

- Natural fibers- Cotton, Flax, Silk, Wool
- Man-made fibers- Rayon, Acetate, Nylons, Polyester, Acrylic, Modacrylic, Olefins, Aramids, Elastomeric, Carbon fiber, Glass fiber.
- Physical properties of textile fibre and their relationship to the polymer structure: Tensile, Moisture, Thermal, Optical and Electrical Properties

UNIT II: Yarn: Production and Properties **8 Hours**

This unit will discuss various yarn production techniques and yarn characteristics.

- Conventional and non-conventional spinning methods
- Yarn properties and their implications on quality: Fineness, Evenness, Yarn count, Yarn crimp, Yarn twist
- Yarn Texturisation- Purpose and Methods of Texturisation

UNIT III: Fabric Construction **12 Hours**

This unit will elaborate on the significant fabric construction techniques.

- Weaving
    - Weaving operations
        - Yarn preparation for weaving
        - Shedding- Tappet, Dobby, Jacquard shedding mechanisms
        - Picking mechanisms
        - Beat-up mechanisms
        - Secondary and auxiliary loom motions
    - Types of Looms – Shuttle and Shuttle less
    - Design interpretation and representation- draft and peg plan
- Knitting
    - Basics of Knitting- Terminology, Types of stitches
    - Knitting machines
    - Types of Knitted fabric and their properties: Warp and Weft knits
    - Knitwear production techniques
- Non-woven
    - Production of non-woven
    - Types of non-woven fabrics and their properties
- Fabric defects- Woven and Knitted

UNIT IV: Quality Control in Textiles: Concept, Organizations, Certifications and Managing Quality **7 Hours**

In this unit, the students will be apprised about the concept of quality and the related certification marks, labels and tools for managing quality

- Concept and scope of quality in fabrics and apparel
- Certification, Quality marks and Labels- Eco-mark, Silk mark, Wool mark, Handloom mark, Care labels, Fibre ID label, Environment labels
- Fabric Inspection procedure
- Tools for managing quality

TUTORIAL

(Credits 1; Hours 15)

1. Comparison between Woven, Knitted and Non-Woven Fabrics

Discussion: Differentiation between various types of fabric in terms of properties and prices

Activity: Visits to stores/ markets to procure samples for recognition and differentiation

2. Spinning, weaving and knitting

Discussion: Processes and machinery being used for these units

Activity: Plan visits to the units to understand the processes and machinery being used. Students will make a detailed report of the units visited.

3. Woven Design interpretation and representation

Discussion: Making of Draft plans and peg plan to be explained

Activity: Students to prepare weave plan, draft and lifting plan for various woven fabric samples

4. Quality marks and labels

Discussion: Various types of quality marks and labels to be discussed in apparels

Activity: Students to carry out a market survey of various apparel categories for analysing quality marks, labels and submit a report of the same

5. Fabric inspection methods and quality management in Garment industry

Activity: Garment industry visits to survey the methods of inspection and quality management employed

Essential Readings

UNIT I

This unit introduces students to natural and man-made fibres, explaining their sources, structure, production techniques and basic characteristics. It will also help the students understand various pphysical properties of textile fibres such as tensile, moisture, thermal, optical and electrical and their relationship to the polymer structure.

- Rastogi, D. and Chopra, S. (Ed) (2017) *Textile Science*, India: Orient Black Swan Publishing Limited. Chapters 1-3.
- Saville, B.P. (2000) Physical Testing of Textiles, Textiles Institute
- Gohl, E. P. G. and Vilensky, L. D. (1983) *Textile science*. Melbourne: Longman Cheshire. Chapters 1-5.
- Sekhri S. (2016) *Textbook of Fabric Science: Fundamentals to Finishing*, 2E, Delhi: PHI Learning Private Ltd. Chapters 1-8.

UNIT II

This unit will introduce various conventional and non-conventional methods of yarn production. Students will also learn about the yarn properties and their implications on quality. The unit will also cover various methods of yarn texturisation.

- Rastogi, D. and Chopra, S. (Ed) (2017) *Textile Science*, India: Orient Black Swan Publishing Limited. Chapter 4.
- Sekhri S. (2016) *Textbook of Fabric Science: Fundamentals to Finishing*, 2E, Delhi: PHI Learning Private Ltd. Chapters 9-10.

UNIT III

This unit covers in detail various fabric production techniques such as weaving, knitting and non-woven methods. The students will learn about the shedding, picking and beating up mechanisms along with the primary and secondary motions of the loom. Various shuttle and shuttle less looms and preparation of draft and peg plans will also be introduced. Additionally, the unit will cover the basics of knitting and non-wovens, the types of machines used and the properties of knitted and non-woven fabrics. Students will also learn about the woven and knitted fabric defects.

- Rastogi, D. and Chopra, S. (Ed) (2017) *Textile Science*, India: Orient Black Swan Publishing Limited. Chapters 6-8.
- Schwartz, P. (1979) *Fabric Forming Systems*, School of Textiles, North Carolina State University.
- Sekhri S. (2016) *Textbook of Fabric Science: Fundamentals to Finishing*, 2E, Delhi: PHI Learning Private Ltd. Chapters 11-13.
- Spencer, D.J. (2005) *Knitting Technology: A Comprehensive Handbook and Practical Guide*, 4th ed. Cambridge: Woodhead Publishing.

UNIT IV

In this unit the students will be introduced to the concept and scope of quality in fabrics and apparel. Additionally, the unit will cover various textile related certification, quality marks and labels. The unit will also cover in detail the fabric Inspection procedure and the tools for managing quality in the garment and apparel industry.

- Saville, B.P. (2000) Physical Testing of Textiles, Textiles Institute
- Bhardwaj, S.K. and Mehta, P.V. (1998) Managing Quality in the Apparel Industry, New Delhi, New Age International
- Kadolph, S.J. (1998) *Quality Assurance of Textiles and Apparel*, Fairchild publication

Suggested Readings

- Bhardwaj, S.K. and Mehta, P.V. (1998) Managing Quality in the Apparel Industry, New Delhi, New Age International
- Booth, J. E. (1982) Principle of Textile Testing, Meanness Butter worth scientific, London
- Brackenbury, T. (2005). *Knitting Clothing Technology*, Blackwell Science Publishers

- Eric, O. (1975). *Spun Yarn Technology*, Butterworth Publication.
- Hearle, J.W.S. and Peters, P.H. (1975) *The Physical Testing of Textile Fibres*, The Textile Institute Heinmann
- Kadolph, S.J. (1998) *Quality Assurance of Textiles and Apparel*, Fairchild publication
- Kothari, V.K., Behera, B.K. (1996) *Quality Control in Textiles and Apparel Industry* A&B, Delhi, Department of Textile Technology

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

DISCIPLINE SPECIFIC CORE COURSE
ADVANCED GARMENT DESIGN AND CONSTRUCTION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Advanced Garment Design and Construction	4	2	0	2	As per admission criteria	Introductory Course in Garment Design and Construction

Learning Objectives

- To understand terminology, tools, dress forms, and fabric selection for draping.
- To apply draping principles and processes to develop accurate balanced patterns.
- To develop advanced patterns for bodice, skirt, and sleeve variations and apply fundamentals of grading.
- To identify and handle specialty fabrics with appropriate seams and finishes.

Learning Outcomes

The students would be able to:

- Demonstrate proficiency in using dress forms and draping tools.
- Drape and develop balanced draped basic patterns and their variations.
- Construct style variations for bodice, skirt, and sleeve designs and apply basic grading techniques.
- Handle specialty fabrics effectively and apply appropriate seam and finishing techniques.

THEORY

(Credits 2; Hours 30)

UNIT I: The Dress Form, Tools and Draping Terminology **4 Hours**

This unit introduces draping terminology, tools, materials and different dress forms. The unit also emphasizes impact of fabric characteristics and grain direction on the fall and balance of a garment.

- Draping terminology, tools, and essential supplies
- The dress form and specialty forms: types and uses
- Fabric selection considerations: hand, appearance, texture, weight
- Understanding grainlines (lengthwise, cross-grain, bias)

UNIT II: Draping Principles and Process **5 Hours**

This unit focuses on the principles and skills of draping; step by step draping process for achieving balanced and accurate patterns. The unit also highlights identification of design details, fabric planning, and innovative zero-waste draping strategies.

- Fundamentals of draping: principles and skills
- Identification of design details; fabric calculation and preparation
- Draping process, marking, trueing, blending seam lines, adding seam allowances
- Principles of balanced patterns
- Zero-waste draping approaches

UNIT III: Advanced Pattern Development and Grading **12 Hours**

This unit focuses on advanced pattern development for creating complex bodice, skirt, and sleeve variations. It also introduces the fundamentals of grading.

- Bodice- Surplice (wrap), off-shoulder, halter, cowls and strapless princess foundation
- Skirts- Pegged skirt with pleats and skirt with godets
- Sleeves- Sleeves with extended cap, wedding sleeve, kimono, raglan and drop shoulder
- Grading- terminology, methods and types of grading

UNIT IV: Handling Specialty Fabrics and Seam Variations **9 Hours**

This unit introduces handling specialty fabrics, addressing challenges in cutting, stitching, finishing, and selecting suitable seam variations for effective construction.

- Specialty Fabrics
    - Furs and feathers
    - Stretch fabrics and knits
    - Sheer and open weave
    - Laces and nets
    - Napped and pile
    - Occasional wear fabrics
- Seam variations and their applications

PRACTICAL

(Credits 2; 60 hours)

1. Draping the basic bodice and developing bodice style variations
2. Draping the basic skirt block and creating skirt style variations (with pleats, flare, yokes, panels, circularity, wraps, asymmetry)
3. Manual grading of a basic bodice and skirt pattern

4.Preparation of a specialty-fabric swatch book (handling precautions, appropriate needle and thread, seam type and finishing methods)

5. Construction of seam variation samples

Essential Readings

UNIT I

This unit introduces the fundamentals of draping, focusing on basic draping terminology, tools, and essential supplies used in garment construction. Students learn about different types of dress forms, including standard and specialty forms, and their appropriate uses. The unit highlights the importance of fabric selection by examining characteristics such as hand, appearance, texture, and weight, and how these affect the fall and balance of garments. It also provides an understanding of grainlines—lengthwise, cross-grain, and bias—and their role in garment fit, structure, and overall drape.

- Amaden-Crawford, C. (2018). *The art of fashion draping* (5th ed., chaps. 1–2). Fairchild Books.
- Jaffe, H., & Relis, N. (2011). *Draping for fashion design* (5th ed., chaps. 1–2). Pearson Education.
- Joseph-Armstrong, H., & Ashdown, S. P. (2022). *Draping for apparel design* (4th ed., chaps. 1–3). Bloomsbury Publishing.
- Kiisel, K. (2020). *Draping: The complete course* (2nd ed., unit 1). Laurence King Publishing.
- Paul, D., & Verreos, N. (2024). *The fundamentals of fashion draping*. Nikolaki, Inc. ISBN 9780999454343.

UNIT II

This unit develops an understanding of the core principles and skills required for effective draping. It guides students through the step-by-step draping process to achieve accurate, well-balanced patterns. Emphasis is placed on identifying design details, planning fabric requirements, and preparing materials before draping. Students learn essential processes such as marking, trueing, blending seam lines, and adding seam allowances to convert draped muslin into usable patterns. The unit also introduces principles of balanced pattern development and explores innovative zero-waste draping approaches, encouraging efficient fabric use and sustainable design thinking.

- Amaden-Crawford, C. (2018). *The art of fashion draping* (5th ed., chaps. 1–5). Fairchild Books.
- Helmersson, B. (2023). *Zero waste patterns*. Quadrille Publishing.
- Joseph-Armstrong, H., & Ashdown, S. P. (2022). *Draping for apparel design* (4th ed., chaps. 4–9). Bloomsbury Publishing.
- Kiisel, K. (2020). *Draping: The complete course* (2nd ed., units 1–3). Laurence King Publishing.

- Rissanen, T., & McQuillan, H. (2023). *Zero waste fashion design* (2nd ed., chaps. 2–5: Zero-waste design methods and fabric planning). Bloomsbury Visual Arts.

UNIT III

This unit focuses on advanced pattern development techniques for creating complex garment styles. Students learn to develop and modify bodice patterns such as surplice (wrap), off-shoulder, halter, cowl, and strapless princess foundations with emphasis on fit and structure. The unit also covers skirt variations including pegged skirts with pleats and skirts with godets, highlighting volume and movement. Advanced sleeve designs such as extended cap, wedding, kimono, raglan, and drop-shoulder sleeves are explored. Additionally, the unit introduces grading fundamentals, including basic terminology, methods, and types used for size adaptation and production.

- Handford, J. (2015). *Pattern grading for women's, men's, and children's apparel*. Wiley.
- Joseph-Armstrong, H. (2021). *Patternmaking for fashion design* (5th ed., chaps. 4–6, 13–15, 19). Pearson Education.
- Mullet, K. K. (2018). *Concepts of pattern grading*. Fairchild Books.
- Parish, P. (2020). *Pattern cutting: The architecture of fashion*. Bloomsbury Publishing.

UNIT IV

This unit introduces techniques for handling specialty fabrics, including furs, feathers, stretch fabrics, knits, sheer and open weaves, laces, nets, napped and pile fabrics, and occasional wear textiles. It addresses challenges in cutting, stitching, and finishing these materials. Emphasis is placed on understanding fabric behaviour and selecting suitable seam variations to ensure proper construction, durability, flexibility, and aesthetic appeal in garments made from specialty fabrics.

- Amaden-Crawford, C. (2023). *A guide to fashion sewing* (7th ed.). Bloomsbury Publishing.
- Amaden-Crawford, C. (2024). *Fashion sewing: Advanced techniques*. Fairchild Books.
- Baugh, G. (2019). *The fashion designer's textile directory: A guide to fabrics' properties, characteristics, and garment-design potential*. Bloomsbury Publishing.
- Czachor, S. (2019). *Sewing with knits and stretch fabrics*. Fairchild Books.
- Shaeffer, C. (2014). *Sewing for the apparel industry*. Pearson Education.
- Shaeffer, C. (2008). *Fabric Sewing Guide*. Krause Publications. Cincinnati

Suggested Readings

- Almond, K. (2017). *Basics Fashion Design: Draping*. Bloomsbury Publishing.
- Amaden-Crawford, C. (2015). *Guide to Fashion Sewing* (6th ed.). Fairchild Books.
- Brown, P., & Rice, J. (2014). *Ready to wear apparel analysis* (4th ed.). Pearson Education. New Delhi
- Glock, R. E., & Kunz, G. I. (2014). *Apparel Manufacturing: Sewn Product Analysis* (5th ed.). Pearson.
- Keiser, S. J., & Garner, M. B. (2012). *Beyond Design: The Synergy of Apparel Product*

Development. Fairchild Books.
- Mehta, R. (2015). *Practical Pattern Making*. CBS Publishers.
- Smith, K. (2012). *Sewing Techniques and Finishes*. Barron's.
- Udale, J. (2014). *Creative Draping*. Laurence King Publishing.

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

DISCIPLINE SPECIFIC CORE COURSE
INDIAN HANDCRAFTED TEXTILES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Indian Handcrafted Textiles	4	3	0	1	As per admission criteria	Nil

Learning Objectives

- To create awareness and foster appreciation of the country's rich handcrafted textiles.
- To acquaint students about the handloom sarees, shawls, carpets and floor coverings of various regions.
- To impart knowledge about the various embroidered and painted textiles.

Learning Outcomes

Students will be able to:

- Recognise and identify embroidered fabrics of different states in terms of stitches, colours, motifs and their significance.
- Explain material and design of selected handloom fabrics.
- Describe the historical perspective, production and techniques of various shawls, carpets and floor coverings.
- Discuss the significance of certification and GI tag for traditional textile crafts.

THEORY
(Credits 3; Hours 45)

UNIT I: Handloom Sarees **12 Hours**

This unit will highlight the importance of certification and GI tag for traditional textiles. The unit will focus upon handloom sarees from diverse regions with respect to history, production centre, techniques, designs and colours.

- Kota doria (Rajasthan), Paithani (Maharashtra), Chanderi and Maheshwari (Madhya Pradesh), Gadwal (Telangana), Kasavu (Kerala), Bomkai (Odisha), Pochampally (Andhra Pradesh)

UNIT II: Shawls **7 Hours**

This unit will provide an overview of diverse materials, techniques, and design features of shawls produced across different regions.

- Kinnauri and Kullu (Himachal Pradesh), Kanikar and Amlikar (Kashmir), Northeast Shawls.

UNIT III: Carpets and Floor Coverings **8 Hours**

This unit highlights the variety of carpets and the distinctive production techniques, designs, and colours associated with each of the following floor coverings.

- Hand-Knotted carpets
- Bhutia carpets
- Namda and Gabba, Kashmir
- Durries : Panja durri of Punjab and Haryana, Chindi durri

UNIT IV: Embroidered and Painted Textiles **18 Hours**

This unit explores the materials, techniques, motifs, and colour traditions found in India's embroidered and painted textiles.

- Embroideries: Chamba Rumal (Himachal Pradesh), Zardozi (Uttar Pradesh), Suf (Gujarat), Toda (Tamil Nadu), Manipur, Banjara (Telangana), Applique work: Pipli (Odisha) and Gotta Patti (Rajasthan).
- Painted textiles: Pichwai painting of Nathdwara and Phad painting (Rajasthan), Thankga painting (Ladakh), Mata ni Pachedi of Gujarat.

PRACTICAL

(Credit 1; Hours 30)

1. Create samples of traditional embroideries.
2. Develop a design catalogue on traditional textile crafts.
3. Create a sample of tapestry weave used in shawl making
4. Prepare an interview schedule for the study of chosen textile craft and craftsmen and administer the prepared interview schedule on selected artisan samples
5. Documentation of a selected textile craft
6. Create products inspired from traditional textiles.

Essential Readings

UNIT I

This unit explores handloom sarees from across India, highlighting their history, production, techniques, and designs. From Kota Doria to Paithani, Chanderi, and more, each saree showcases unique traditions and craftsmanship. It will also uncover the importance of certification and GI tags in promoting and protecting these textiles, celebrating the artisans who weave culture, history, and beauty.

- Barnard, N., Gillow, J., 1993, Indian Textiles, Thames and Hudson, USA
- Chattopadhaya, K.D., 1995, Handicrafts of India, Wiley Eastern Limited, N Delhi
- Crill, R., 2015, The Fabric of India, Victorial and Albert Museum, UK
- Chishti R. K., Kelkar R. & Singh M. (2010). Saris of India : tradition and beyond. New Delhi: Lustre Press, Roli Books.
- Singh M. & Chishti R. K.,(1995). Saris of India : Bihar and West Bengal. New Delhi: Amr Vastr Kosh & Wiley Eastern Ltd Pune
- Das, Shukla, 1992, Fabric Art- Heritage of India, Abhinav Publications, N Delhi.
- GI Tags and certification- https://handicrafts.nic.in/CmsUpload/12222017102212GI%20BOOK%20FINAL%202-5-17_resized.pdf
- GI tagged Indian textiles-https://www.usthadian.com/gi-tagged-indian-textiles-driving-heritage-and-artisan-growth/

UNIT II

Indian shawls showcase rich cultural diversity and artisanal expertise. This unit explores shawls from across India - Himachal Pradesh (Kinnauri, Kullu), Kashmir (Kanikar, Amlikar), and Northeast India, highlighting unique materials, techniques, and designs that reflect tradition and regional identity.

- Irwin, J, 1954, Shawls - A study in Indo European Influences, London
- Jaitley,J, ed 1990, Crafts of Jammu, Kashmir and Ladakh, Mapin Publishing, Ahmedabad
- Rizvi, J., & Ahmed, M. (2017). Pashmina: The Kashmir shawl and beyond (Second revised edition). Marg Foundation.
- Roy, S. K. (2007). Textile traditions of Northeast India. Agam Kala Prakashan.
- Jaitly, J. (2012). Crafts atlas of India (2012 ed., 464 pp.). Niyogi Books. (ISBN: 978-8189738372)
- Sharma, N et al 2008, Traditional handicrafts and handlooms of Kullu district, HP., Indian Journal of Traditional Knowledge, Vol 7 (1), Jan pp56-61
- Ames, Frank 1986, The Kashmir Shawl, Antique Collections, Woodbridge
- Kullu shawls - https://www.researchgate.net/profile/Anju-Kapoor-3/publication/363921343_Traditional_Handicrafts_and_Handloom_of_Kullu_district_Hi

machal_Pradesh/links/6447e4c7d749e4340e383238/Traditional-Handicrafts-and-Handloom-of-Kullu-district-Himachal-Pradesh.pdf?origin=scientificContributions

- Kanikar Shawls - https://www.researchgate.net/profile/Veenus-Jain/publication/332801594_Kani_Shawl_A_Case_Study_of_a_Milestone_in_the_Art_of_Weaving/links/5ccbc2bb92851c3c2f818f79/Kani-Shawl-A-Case-Study-of-a-Milestone-in-the-Art-of-Weaving.pdf?origin=publication_detail&_tp=eyJjb250ZXh0Ijp7ImZpcnN0UGFnZSI6InB1YmxpY2F0aW9uIiwicGFnZSI6InB1YmxpY2F0aW9uRG93bmxvYWQiLCJwcmV2aW91c1BhZ2UiOiJwdWJsaWNhdGlvbiJ9fQ

UNIT III

Indian carpets and floor coverings are renowned for their beauty and diversity, reflecting the country's rich textile heritage. This unit explores the distinctive world of hand-knotted carpets, Bhutia carpets, Namda and Gabba from Kashmir, and Durries like Panja durri from Punjab and Haryana, and Chindi durri, highlighting their unique production techniques, designs, and colours that showcase regional craftsmanship and tradition.

- Mathur, A. (2004). Indian carpets: A hand-knotted heritage (Hardcover ed., 96 pp.). Rupa Publication Pvt. Ltd. (ISBN: 8129103095)
- Pande, P. (2024). Floor coverings from Kashmir: Kaleen carpets, namdah, gabba, ari rugs and wagoo mats (1st ed., 236 pp.). Niyogi Books.
- Chattopadhyay K. D. 2018, Indian Carpets and Floor Coverings, All India Handicrafts Board Digitised version https://archive.org/details/indiancarpetsflo00chat
- Namda - https://gaatha.org/Craft-of-India/namda-craft-detail-research/
- Namda Art of Kashmir- https://oaklores.com/2024/12/06/namda-art-of-kashmir-reviving-the-heritage-of-handcrafted-rugs/
- Gabba making - https://poonchwoolenandhandicraftservices.wordpress.com/best-woolen-services-in-poonch/gabba-making-in-valley-of-poonch/
- Panja Durries - https://www.ijcmas.com/8-2-2019/Saroj%20Yadav%20and%20Neelam%20M.%20Rose.pdf
- Patterns and symbols of Panda Durries https://oaklores.com/2024/12/16/traditional-patterns-and-symbols-in-punjabi-durries/

UNIT IV

India's embroidered and painted textiles showcase rich artistic heritage. This unit explores embroideries (Chamba Rumal, Zardozi, Suf, etc.), appliqué work (Pipli, Gotta Patti), and painted textiles (Pichwai, Phad, Thankga, Mata ni Pachedi), highlighting unique techniques, motifs, and colours that make each textile a masterpiece.

- Jhulka, Anu 2019, Nathdwara Pichwais: The paintings of Lord Krishna, Blue Rose Publisher

- Mohanty, B.N, 1980, Applique craft of Orissa, Alfred Buhler ed, Calico museum of textiles (Digitised 2009)
- Thankha Paintings - The Process of Thangka Painting https://artsandculture.google.com/story/the-process-of-thangka-painting-dastkari-haat-samiti/-QWh8YagYf4tIQ
- Karolia, Anjali, 2019, Traditional Indian Handcrafted Textiles, Niyogi Publishers
- How Mata ni Pachedi is Created https://artsandculture.google.com/story/how-mata-ni-pachedi-is-created-dastkari-haat-samiti/4wWx_aQVxaGXJQ
- Phad Paintings - https://www.artisera.com/blogs/expressions/phad-paintings-of-rajasthan
- Naik, Shailja 1996, Traditional Embroideries of India, APH Publishing

Suggested Readings

- Annual Report, (2002-2003), Handloom Industry, Ministry of textiles, Chapter 5, pg 1-20
- Chelna Desai, 1988, Ikats Textiles of india, Chronicle Books, India
- Ghosh, G.K 2000, Ikat Textiles of India New Apron, New Delhi
- Handa, O.C. (1998). Textiles, Costumes and Ornaments of the Western Himalayan. Indus Publishing.
- Jayakar, Pupul 1979, Homage to Kalamkari, Marg Publishing, Bombay
- Mausumi Kar, (2015), The Indian Textile and Clothing Industry An Economic Analysis, Springer New Delhi Heidelberg New York Dordrecht London, Chapter 1& 2, pg 12-33.
- Pandit Savitri, 1951, Indian Embroidery- Its Variegated Charm, Pandit Publisher, Baroda Embroidery tutorials, video links of woven textiles and slide share
- Carpet weaving Traditions - https://www.granthaalayahpublication.org/journals/granthaalayah/article/download/IJRG19_ARTS11_08/794/4631
- Craft Documentaries on YouTube

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

DISCIPLINE SPECIFIC CORE COURSE
ADVANCED DYEING AND PRINTING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Advanced Dyeing and Printing	4	2	0	2	As per admission criteria	Introductory Course in Dyeing and Printing

Learning Objectives

- To gain knowledge about the new developments in dyeing and printing
- To understand the environmental issues related with dyeing and printing
- To understand the concept of colour and its measurement

Learning Outcomes

The students would be able to:

- Identify and describe different dyeing machines.
- Describe the innovative methods of printing
- Explain certifications and standards related to dyeing and printing of textiles.
- Objectively measure and analyse the colour of dyed and printed textiles

THEORY
(Credits 2; Hours 30)

UNIT I: Dyeing **12 Hours**

This unit lays thrust on the dyeing machines used at different stages of dyeing and latest developments in dyes and dyeing technology.

- Dyeing machines
- Mass colouration
- Dyeing of blends
- New developments in dyes: Thermochromic dyes, Photochromic dyes, Bio dyes, etc.

UNIT II: Printing **8 Hours**

This unit highlights various new methods and styles of printing.

- New developments in printing- Digital printing, Ink-jet printing, Flock printing, Foil printing, 3-D printing, etc.
- Printing with Natural dyes: Traditional styles and new developments

UNIT III: Ecological Concerns in Dyeing and Printing **5 Hours**

This unit highlights the impact of dyeing and printing on the environment and various eco-friendly products and processes.

- Environmental impacts of dyeing and printing
- Eco-friendly processes and products: Low water and low energy intensive dyeing methods (Ultrasonic dyeing, Foam dyeing, Supercritical CO_2 dyeing, etc.)
- Certifications and standards in dyeing and printing

UNIT IV: Colour Measurement **5 Hours**

This unit deals with the dimensions of colours and its measurement.

- Colour theory: hue, value, intensity
- Principles of colour measurement: Optical density, K/S, CIE-L*c*h*, CIE-L*a*b*
- Metamerism

PRACTICAL
(Credits 2; Hours 60)

- Dyeing of different substrates with natural dyes
- Printing with natural dyes
- Dyeing and printing of blends
- Printing on silk and wool
- Discharge on reactive grounds
- Discharge printing on silk with acid ground
- Transfer Printing
- Colour measurement

Essential Readings

UNIT I

This unit explains the requirements of dyeing machine. It includes different types of machines used for dyeing at various stages of dyeing. It also deals with the concept of mass colouration and is importance. Dyeing of important blends will also be dealt with. In addition, new developments in dyeing will be explained.

- Aspland, J. R. (1997). *Textile dyeing and colouration*. AATCC.
- Chakraborty, J. N. (2014). *Fundamentals and practices in colouration of textiles* (2nd ed.). Woodhead Publishing India Pvt. Ltd.
- Rastogi, D., & Chopra, S. (Eds.). (2017). *Textile science*. Orient Black Swan Publishing Limited.
- Sekhri, S. (2022). *Textbook of fabric science: Fundamentals to finishing* (4th ed.). PHI Learning Pvt. Ltd.
- Trotman, E. R. (1984). *Dyeing and chemical technology of fibres* (6th ed.). Charles Griffin and Company Ltd.
- सेख़% सीमा (2022), aw ि◌ay7v, PHI Learning Pvt. Ltd. Delhi

UNIT II

This unit includes developments and advancements in textile printing such as digital printing, ink jet printing, 3D printing etc. This unit further discusses printing with natural dyes.

- Clarke, W. (1977). *An introduction to textile printing*. Butterworth and Co. Ltd.
- Kolanjikombil, M. (2023). *Printing of textile substrates: Machineries and methods* (Vol. 1). Woodhead Publishing.
- Mahapatra, N. N. (2022). *Textile printing*. Woodhead Publishing India.
- Miles, L. W. C. (1994). *Textile printing* (2nd ed.). Society of Dyers and Colorists.
- Shenai, V. A. (1979). *Technology of textile processing: Technology of printing* (2nd ed.). Sevak Publications.
- Shore, J. (Ed.). (1990). *Colorants and auxiliaries: Organic chemistry and application properties* (Vols. 1–2). Society of Dyers and Colorists.

UNIT III

In this unit students will be familiarised with the impact of various chemicals and methods used for dyeing and printing on the environment. Developments towards eco-friendly dyeing and printing will be dealt with.

- Bhatia, S. C., Mangla, P., & Devraj, S. **(2020).** *Energy conservation in textile industry*. Woodhead Publishing India.
- Mahapatra, N. N. **(2015).** *Textiles and environment*. Woodhead Publishing India Pvt. Ltd.

UNIT IV

Fundamental concepts of colour and its measurement will be explained. The students will learn the use of colour measurement in the Textile industry.

- Gulrajani, M. L. (Ed.). (2010). *Colour measurement: Principles, advances and industrial applications*. Woodhead Publishing.

- Shah, H. S., & Gandhi, R. S. (1990). *Instrumental colour measurement and computer aided colour matching for textiles*. Mahajan Book Publication.

Suggested Readings

- Gulrajani, M. L. (2012). Colour specification and visual approval methods for textiles. In M. L. Gulrajani (Ed.), *Colour design: Theories and applications* (pp. 271–294). Woodhead Publishing.
- Kuehni, R. G. (1975). *Computer colorant formulation*. Lexington Books.
- Park, J. (1993). *Instrumental colour formulation: A practical guide*. Woodhead Publishing.
- Shah, H. S., & Gandhi, R. S. (1990). *Instrumental colour measurement and computer aided colour matching for textiles*. Mahajan Book Publication.
- Textile Institute / Elsevier. (2014). *Principles of colour and appearance measurement*. Woodhead Publishing Series in Textiles.
- Sule, A. D. (2002). *Computer colour analysis*. New Age International Publishers.

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

Discipline Specific Elective Courses

DISCIPLINE SPECIFIC ELECTIVE COURSE
TEXTILE DESIGN DEVELOPMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Textile Design Development	4	1	0	3	As per admission criteria	Nil

Learning Objectives

- To develop an understanding of design elements, principles, forecasting, trend analysis, and design thinking for textile design development.
- To enhance observational and rendering skills through nature drawing, object drawing and motif development.
- To enable students to translate concepts into practical outputs such as motifs, pattern repeats, colour ways and digital textile layouts.
- To build competency in both vector and raster software for digital drawing, motif refinement, seamless repeat creation and product mock-up development.
- To encourage problem-solving, creativity and user-centered thinking by integrating design thinking with hands-on textile product development.

Learning Outcomes

The students would be able to:

- Apply elements and principles of design, forecasting concepts, trend types and design thinking stages in their practical work.
- Create detailed nature and object drawing, rendering and motif variations based on observation and analysis.
- Digitally refine motifs using vector and raster software and convert them into seamless pattern repeats and multiple colour ways.
- Interpret trend and forecast data for colour selection, motif direction and product styling.
- Apply digitally developed patterns to create various textile products.

THEORY

(Credit 1; Hours 15)

UNIT I: Elements and Principles of Design 6 Hours

This unit introduces the elements and principles guiding textile composition. It covers also covers techniques of visual layout and its composition.

- Elements of Design: Line, Colour, Texture, Shape, Form and Space
- Principles of Design: Balance, Rhythm, Proportion, Emphasis, Harmony and Unity
- Visual composition and design thinking basics

UNIT II: Design Context and Application 9 Hours

This unit provides an overview of forecasting and textile trends and discusses major art movements. The unit also details the design thinking process and the development of mood boards and theme boards to visually communicate trend directions and design concepts.

- Trends and Forecasting: Micro, Macro, Fad, Classic, Seasonal
- Major art movements and their textile applications: Renaissance, Baroque, Neoclassicism, Romanticism, Realism, Art Nouveau, Art Deco, Cubism, Futurism, Abstract Expressionism and Pop Art
- Design Thinking Process: Empathize, Define, Ideate, Prototype and Test
- Development of mood boards and theme boards

PRACTICAL

(Credits 3; 90 hours)

1. Nature drawing, object drawing and rendering
2. Development of motif- woven and surface design
3. Forms of motif- Natural, stylized, simplified, geometrical, abstract
4. Vector Based softwares- Coreldraw/Inkscape/any open source software
5. Raster Based softwares- Photoshop/Photopea/any open source software
6. Brain storming, moodboard and theme board
7. Design repeats and colour ways
8. Digital development of seamless patterns
9. Application of digitally developed patterns and repeats to various textile products
10. Design Project: Product development using self created digital patterns*

**Design project should integrate design principles, processes and design thinking to develop a textile design, showcasing skills in design development and execution*.

Essential

Readings

UNIT I

This unit introduces the basic elements and principles that form the foundation of textile design. It covers the elements of design—line, colour, texture, shape, form, and space—and explains their role in creating effective textile compositions. The principles of design, including balance, rhythm, proportion, emphasis, harmony, and unity, are discussed in relation to visual organization and layout. The unit also highlights visual composition techniques and distinguishes between the functional and decorative aspects of textile design.

- Brommer, G. F. (2000). *Elements and principles of design: Student guide with activities (Art appreciation ser.)*. Crystal Productions.Lauer, D. A., & Pentak, S. (2012). Design Basics. Cengage Learning.
- Lester, J. (2013). *Visual Research: An Introduction to Research Methodologies in Graphic Design*. Bloomsbury.
- Wong, W. (1993). *Principles of Form and Design.* John Wiley & Sons.
- Zelanski, P., & Fisher, M. P. (2011). *Design Principles and Problems.* Cengage Learning.

UNIT II

This unit introduces the concept of forecasting and its importance in textile and fashion design and explains different types of trends such as micro, macro, fad, classic, and seasonal trends. This unit also provides an overview of major art movements and their influence on design, highlighting the evolution of artistic styles, themes, and techniques across different periods. The unit also focuses on the development of mood boards and theme boards as visual tools to communicate trend directions and design concepts.

- Ambrose, G., & Harris, P. (2011). *Design Thinking*. AVA Publishing.
- Arnason, H. H., & Mansfield, E. C. (2013). *History of Modern Art.* Pearson.
- Bhardwaj, V., & Fairhurst, A. (2021). *Fast Fashion, Sustainability, and the Ethical Appeal of Luxury Brands*. Routledge.
- Brannon, E. L. (2011). *Fashion Forecasting.* Fairchild Books.
- Brown, T. (2009). *Change by Design.* Harper Business.
- Gombrich, E. H. (2006). *The Story of Art.* Phaidon Press.
- Holland, G., & Jones, R. (2017). *Fashion Trend Forecasting*. Laurence King Publishing.
- Honour, H., & Fleming, J. (2009). *A World History of Art.* Laurence King Publishing.
- Jackson, T., & Shaw, D. (2009). *Mastering Fashion Marketing.* Palgrave Macmillan.
- Kaul, M. (1961/Updated Editions). *Trends in Indian Painting: Ancient, Medieval, Modern*. Dhoomimal Ramchand. (Classic Indian text).
- Kelley, T., & Kelley, D. (2013). *Creative Confidence: Unleashing the Creative Potential Within Us All.* Crown Business.
- Liedtka, J., & Ogilvie, T. (2011). *Designing for Growth: A Design Thinking Tool Kit for Managers.* Columbia University Press.

- Naik, Shailaja D. (2010). *CAD in Clothing and Textiles*. New Age International Publishers.
- Plattner, H., Meinel, C., & Leifer, L. (2011). *Design Thinking: Understand – Improve – Apply.*
  Springer.
- Prakash, V. (2020). O*ne Continuous Line: Art, Architecture and Urbanism of Aditya Prakash.*
  Mapin Publishing. (Indian context; relevant art/design)
- Raymond, M. (2010). T*he Trend Forecaster's Handbook.* Laurence King Publishing.
- Singh, R. (2023). *Fashion Forecasting and Trend Analysis.* Bloomsbury India. (Indian publication; recent)
- Wilson, J. A. (2001). *A Handbook of Textile Design; Principle, Process and Practice.* (1 ed.) Woodhead Publishing.

Suggested Readings

- Frings, G. S. (2007). *Fashion: From Concept to Consumer* (9th ed.). Prentice Hall.
- Fiell, C., & Fiell, P. (2002). *Graphic Design for the 21st Century*. Taschen.
- Bonnici, A. (2019). *Textile Design Theory in Practice*. Bloomsbury.
- *Eckert, Claudia & McFadden, Margaret (2010). Computer-Aided Design for Fashion and Textiles. Woodhead Publishing.*
- Forecasting Websites- WGSN – *https://www.wgsn.com,* Fashion Snoops- *https://www.fashionsnoops.com,* Pantone Color Institute – *https://www.pantone.com,*
- Softwares- Adobe Photoshop / Illustrator – *https://www.adobe.com,* CorelDRAW Graphics Suite – *https://www.coreldraw.com,* Inkscape – *https://inkscape.org,* Photopea– *https://www.photopea.com*

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

GLOBAL COUTURE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Global Couture	4	3	1	0	As per admission criteria	Nil

Learning Objectives

- Understand the evolution and structure of global couture and fashion systems across regions.
- Analyse global fashion markets, value chains, and trade policies that shape international apparel. flows.
- Evaluate the creative, cultural and organisational dynamics of iconic and emerging couture houses and designers.
- Examine contemporary issues in couture, including identity, inclusivity, technology, sustainability and ethics.
- Apply global fashion forecasting tools and trend intelligence to conceptualise couture-oriented design directions.

Learning Outcomes

- Explain major transformations in global couture and identify the role of established and emerging fashion capitals.
- Interpret global sourcing patterns, production geographics, and the impact of WTO and free-trade agreements on fashion markets.
- Critically compare global designers and couture houses, recognising their creative leadership and evolving narratives.
- Analyse how culture, identity, technology, and sustainability concerns shape contemporary couture practices.
- Use forecasting principles and trend platforms to generate trend-based couture concepts supported.

THEORY
(Credits 3; Hours 45)

UNIT I: Global Fashion Systems & Couture Dynamics 12 Hours

This unit introduces the evolution of global couture and the functioning of international fashion systems. It covers global value chains, trade agreements and the significance of fashion capitals.

- Evolution of global couture
- International fashion markets and global value chains.
- Shifting production geographics, Offshore sourcing and low-cost manufacturing countries.
- WTO and free trade agreements on global apparel trade
- Established fashion capitals: Paris, Milan, New York, London, Tokyo
- Emerging global fashion cities: Seoul, Shanghai, Dubai, Copenhagen, Johannesburg.

UNIT II: Global Designers and Couture Houses 12 Hours

This unit explores iconic global designers, the development of couture houses and the role of creative leadership. It also examines emerging designers and India's evolving couture ecosystem.

- Iconic global designers: European, American, Japanese, and Asian
- Evolution of couture houses
- Role of creative leadership
- Emerging international designers and new couture narratives
- Indian couture ecosystem: leading and contemporary couturier

UNIT III: Culture, Identity & Contemporary Issues in Couture 11 Hours

This unit examines how culture, identity and contemporary socio-environmental issues shape global couture. It includes inclusivity, technology-driven couture, sustainability and ethical practices.

- Culture, heritage and identity in global couture.
- Gender-neutral and inclusive couture design
- Technology-driven couture: digital fashion, virtual design and AI.
- Sustainability and environmental challenges in fashion
- Ethical and fair-trade practices

UNIT IV: Global Fashion Forecasting & Trend Intelligence 10 Hours

This unit provides the fundamentals of forecasting and trend using global trend platforms. It focuses on analysing macro/micro trends and translating them into couture concepts.

- Fundamentals of forecasting and trend theory
- Macro, micro, and seasonal trend development.
- Global trend intelligence platforms: WGSN, Trend Union, Fashion Snoops
- Direction-setting: colours, materials, silhouettes and details.
- Trend interpretation and translation into conceptual couture designs

TUTORIAL

(Credits 1 ; Hours 15)

Visits to haute-couture stores/ production houses and social media platforms. Presentations and projects would be the outcome

1. Technical analysis of works of iconic fashion designers
   Discussion - Trends, elements of design, raw material analysis, constructional analysis
   Class Activity - Secondary data collection of designer's collection and store visits
2. Interpretation of Fashion trends
   Discussion - Identify patterns, social and cultural context, as well as life cycle tracking
   Class Activity - Online information collection and class presentation
3. Use of technology and bioscience in fashion
   Discussion- Use of smart textiles, new generation fibres, recycled fibres, phase change materials etc
   Class Activity - Review and present/ report any designer collection
4. Analysis of designer collections inspired by traditional textile arts
   Discussion- Review of heritage collections on the ramp
   Class Activity - Review and present/ report any designer collection

Essential readings

UNIT 1

This unit introduces the dynamics of fashion movement in the international markets as well as in the production centres. It deals with the technical competencies of low-cost producing countries and how they have become the epitome of production for labour-intensive products, such as garments. It further elaborates on the evolution of historically eminent fashion capitals, as well as the relatively new fashion centres, their characteristic features, and comparative advantages.

- Breward, C., & Gilbert, D. (Eds.). (2006). *Fashion's world cities.* Berg Publishers.
- Fringes G.S. (2007). *Fashion from Concept to Consumer*, 9th edition, Prentice Hall, New Jersey.
- Stone, E. (2013). *The dynamics of fashion (4th ed.)*. Bloomsbury Publishing India.

UNIT II

The proliferation of infrastructural support and creativity to interpret fashion trends has led to the conceptualisation, creation and showcase of landmark collections by various designers across the globe. Iconic designers are known for their unique-selling-proposition, and have built fashion identity which has changed the face of fashion in the socio-cultural context. Together with the team of stylist, merchandisers, and production workforce, many couture houses have developed their collections periodically in systematic fashion seasons. This unit elaborates on the discussion of various couture houses in India as well as internationally.

- Jani, A, Khosla, S. (2000) *India Fantastique Fashion.* Thames and Hudson Publication

- Palomo-Lovinski, N. (2010). *The world's most influential fashion designers: Hidden connections and lasting legacies of fashion's iconic creators.* Barrons Educational Series Inc.
- Troy, N. J. (2002). *Couture culture: A study in modern art and fashion.* MIT Press.

UNIT III

The shaping of fashion as a product is driven by the new age variables which depend on the demographic and technological changes in the marketing environment. There is a distinct shift in consumer behaviour and technological life cycle which are addressed by the designers in order to target a niche in design. These could be "design for inclusivity" or "design for gender neutrality". As climate change and sustainability issues are increasingly gaining momentum, couturiers are further classified and identified with "minimalistic fashion", "ethical fashion" and "sustainable fashion".

- Bowles, H. (2023). I*ndia in fashion- The impact of Indian dress and textiles on the fashionable imagination. NMACC, India*. Rizzoli International Publications
- https://www.lakmefashionweek.co.in/home/sustainability
- https://www.theartsfamily.com/artists/kallol-datta

UNIT IV

The attributes of fashion from acceptance to rejection, are governed by trends which are predicted in a scientific manner by social scientists. They capture the nuances of society and industry in a qualitative as well as quantitative manner and showcase the elements of design in the form of "Trends" which dictate design development. This unit deals with the trajectory of trends, their interpretation for individualistic mood boards and product design. It elaborates on various international agencies 'forecasts, which are followed by the fashion fraternity – textile and fashion designers, producers, visual merchandisers and stylists.

- Holland, G., & Jones, R. (2017). *Fashion trend forecasting.* Laurence King Publishing.
- Kim Eundeok, Fiore A. M. & Hyejeong Kim (2021). *Fashion Trends, 2nd Ed.* Bloomsbury Publication
- https://heuritech.com/fashion-trends-2026/

Suggested Readings

- Barnard, M. (Ed.). (2007). *Fashion theory: A reader.* Routledge.
- Barthes, R. (2006). *The language of fashion (A. Stafford, Trans.).* Bloomsbury.
- Brannon, E. L. (2010). *Fashion forecasting (3rd ed.).* Fairchild Books/Bloomsbury.
- Bowles, H. (2011). *The world of couture.* Abrams.
- R. Andrew, (2018) *Key Concepts for the Fashion Industry*, Bloomsbury Publishing, India.
- Right E. B. (2022). *Vintage Fashion: Collecting and Wearing Designer Classics.* Welbeck Publishing.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
FASHION MARKETING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Fashion Marketing	**4**	**3**	**0**	**1**	**As per admission criteria**	Nil

Learning Objectives

- To understand the foundational concepts, scope, and significance of fashion marketing in a dynamic market environment.
- To analyze consumer behaviour, market segmentation, targeting strategies, and fashion-specific buying patterns.
- To apply principles of product planning, branding, positioning, and differentiation to fashion products.
- To evaluate pricing strategies and their suitability for diverse product categories and life-cycle stages in the fashion industry.
- To create integrated marketing communication plans using traditional, digital, and influencer-driven promotional tools tailored for fashion brands.
- To develop customer-driven marketing mix strategies and utilize analytical and technological tools to assess digital marketing, e-commerce models, and emerging trends.

Learning Outcomes

Students will be able to:

- Define and explain the key concepts of fashion marketing, market environment, and consumer behaviour.
- Comprehend various consumer behaviour determinants, segmentation bases, and targeting approaches relevant to fashion markets.
- Apply product planning concepts, including product mix, product life cycle strategies, positioning, brand elements and branding strategies to real-world fashion scenarios.
- Evaluate new-product pricing, product-mix pricing, and pricing adjustment strategies appropriate for fashion products.
- Design and assess integrated marketing communication (IMC) strategies incorporating advertising, digital media, influencers, stylists, and content creators as well as digital marketing tools.

THEORY

(Credits 3; 45 Hours)

UNIT I: Understanding Marketing Management and Consumer Behaviour 12 Hours

This unit introduces the fundamentals of marketing environment, segmentation, and targeting. It covers key consumer behaviour concepts and the buying decision process.

- Importance and scope of Marketing
- Analysing marketing environment
- Market segmentation and targeting
- Consumer Behaviour Analysis
- Factor Influencing consumer Behaviour
- Type of buying decision behaviour
- Buying decision process

UNIT II: Product Planning and Branding 13 Hours

This unit explores product mix, product life cycle, and differentiation strategies and introduces branding elements and strategies used by fashion brands.

- Product line, Product mix and Product classification
- Product life cycle and strategies
- Product positioning and Differentiation strategies
- Brand elements-tangible, intangible
- Branding Strategies

UNIT III: Pricing 8 Hours

This unit covers essential pricing strategies for new and existing products, product mix pricing and price adjustment strategies in the fashion market.

- New Product Pricing strategies
- Product mix pricing strategies
- Pricing adjustment strategies

UNIT IV: Marketing Communication and Promotion 12 Hours

This unit presents integrated marketing communication and promotion techniques and also focuses on digital marketing for fashion brands.

- Integrated marketing communication strategy

- Development and managing advertising programs
- Sales promotion and Personal selling
- Marketing in the digital world

  – Concept and features
  – Key digital channels: Content and Email marketing, Social media marketing for fashion brands
  – Role of influencers

PRACTICAL
(Credit 1; Hours 30)

1. Analysis of Demographics of Indian market
2. Lifestyle segmentation (VALS) in fashion industry
3. Idea generation for a new product
4. Brand study
   – Tangible and Intangible elements
   – Brand Portfolio
   – Brand Positioning and Differentiation
5. Review product pages from leading e-commerce platforms with respect to Fabric specifications, Fit guides and sizing tools, High-resolution imagery and videos, User-generated reviews
6. Analysis of AI shopping assistants in E-commerce

Essential Readings

UNIT I:

This unit provides an overview of marketing management principles with specific reference to the fashion sector. It familiarizes students with the scope and relevance of marketing and examines how internal and external environmental factors influence marketing decisions. The unit also introduces market segmentation and targeting approaches. The unit also gives in-depth insight into consumer behaviour, exploring various factors influencing consumers, along with different buying decision patterns and stages, enabling learners develop the ability to analyze consumer behaviour.

- Babu, Ramesh V., Arunraj A. (2025) *Fashion Marketing Management: WPI* (chapter 1-2)
- Schiffman, L. G. & Wisenbilt, J. (2019) Consumer Behaviour 12th Ed.: Pearson
- Easy, M. (2020) *Fashion Marketing* (4th Edition, chapter 1-5) Wiley-Blackwell

- Jackson, T., & Shaw, D. (2009) *Mastering Fashion Marketing*: Palgrave Macmillan (chapter 1-3)
- Kotler, P., Keller, Chernev, A., Sheth Jagdish N., Shainesh G. (2025) *Marketing Management (*17h*ed.*, chapters 1-4, 6) Pearson.
- Posner, H. (2021) *Marketing Fashion: Strategy, branding and promotion* (3rd Ed. Chapter 1,2,4) Laurence King Publishing

UNIT II:

This unit examines the strategic planning and management of fashion products and brands. It introduces key concepts related to product lines, product mix, and product categorization, along with an analysis of product life cycle stages and associated strategies. The unit highlights the importance of positioning and differentiation in creating market distinction. It further explores branding by identifying both tangible and intangible brand elements and reviews various branding approaches used by fashion organizations to establish identity, credibility, and customer loyalty.

- Babu, Ramesh V., Arunraj A. (2025) *Fashion Marketing Management*: WPI (chapter 3)
- Easy, M. (2020) *Fashion Marketing* (4th Edition, chaps 5-6) Wiley-Blackwell
- Jackson, T., & Shaw, D. (2009) *Mastering Fashion Marketing*: Palgrave Macmillan (chapter 3, 4, 8)
- Kotler, P., Keller, Chernev, A., Sheth Jagdish N., Shainesh G. (2025) *Marketing Management* (17h*ed.*, chaps7-11) Pearson.
- Posner, H. (2021) *Marketing Fashion: Strategy, branding and promotion* (3rd Ed., chap 5) Laurence King Publishing

UNIT III:

This unit focuses on pricing decisions as a vital component of fashion marketing strategy. It addresses pricing approaches adopted for new product launches as well as for existing product lines. The unit also discusses product mix pricing and different pricing adjustment methods employed to suit changing market demands and consumer segments. Through this study, students gain insight into how pricing influences consumer perception, market competitiveness, and overall brand performance.

- Easy, M. (2020) *Fashion Marketing* (4th Edition, chapter 7) Wiley-Blackwell
- Jackson, T., & Shaw, D. (2009) *Mastering Fashion Marketing*: Palgrave Macmillan (chapter 5)
- Kotler, P., Keller, Chernev, A., Sheth Jagdish N., Shainesh G. (2025) *Marketing Management* (17h*ed.*, chapter 12) Pearson.
- Babu, Ramesh V., Arunraj A. (2025) *Fashion Marketing Management: WPI* (chapter 8)

UNIT IV:

This unit explores the role of communication and promotional activities in building and

sustaining fashion brands. It introduces the concept of integrated marketing communication and examines the planning and execution of advertising programs. The unit also covers sales promotion techniques and personal selling practices. Additionally, it emphasizes the growing importance of digital marketing, outlining its key characteristics and major digital channels such as content marketing, email marketing, and social media platforms. The influence of digital opinion leaders and influencers on fashion consumers is also analyzed.

- Belch, E. G. and Belch, A.M. (2003). Advertising and Promotion- An integrated marketing communications perspective 6th Ed.: Tata McGraw-Hill publishing company ltd
- Easy, M. (2020) *Fashion Marketing* (4th edition, chap 9) Wiley-Blackwell
- Barker, M., Barker, D., Bormann, N., & Neher, K., (2017) *Social Media Marketing*: A strategic approach 3rd Ed. : Cengage Learning India Pvt. Ltd
- Jackson, T., & Shaw, D. (2009) *Mastering Fashion Marketing*: Palgrave Macmillan (chap 6)
- Kotler, P., Keller, Chernev, A., Sheth Jagdish N., Shainesh G. (2025) *Marketing Management* (17h edition, chaps13-17) Pearson.
- Posner, H. (2021) *Marketing Fashion: Strategy, branding and promotion* 3rd Ed.: Laurence King Publishing (chap 6)

Suggested Readings

- Chaffey, D., & Ellis-Chadwick, F. (2019) *Digital Marketing* 7th Ed.: Pearson
- Sachdeva, Nidhi. (2018) *Fashion: Marketing, Merchandising and Buying.* Heritage Publishers
- Diamond, J., Diamond, E. and Litt, S.D. (2006) *Fashion Retailing- A Multi- Channel Approach*: Bloomsbury Publishing Inc.
- Jackson, T., & Shaw, D. (2001) *Fashion Retail* : Palgrave Macmillan
- Jain, J.N. and Singh, P.P. (2007) *Modern Marketing Management- Principles and Techniques*. New Delhi: Regal Publications.
- Poloian, G.L.(2009). Multichannel Retailing : Fairchild Books-New York.
- Posner, H. (2015) Fashion buying 3rd Ed. : Wiley

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
STATISTICS AND DATA MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Statistics and Data Management	4	3	0	1	As per admission criteria	Nil

Learning Objectives

- To develop understanding of fundamental and advanced statistical concepts used in research and data analysis.
- To enable students to apply descriptive and inferential statistics for real-world decision-making.
- To strengthen ability to formulate hypotheses, select appropriate statistical tests, and interpret outputs.
- To prepare students for quantitative research, industry analytics, and academic data projects.
- To train students in using Excel and SPSS for data handling, visualization, and interpretation.

Learning Outcomes

The students would be able to:

- Explain key concepts in descriptive and inferential statistics.
- Organize, clean, and summarize datasets using appropriate statistical tools.
- Apply probability distributions, correlation, regression, and hypothesis testing.
- Use Excel and SPSS for data visualization, statistical testing, and reporting.
- Interpret statistical outputs and draw valid conclusions for research decisions.
- Design and execute quantitative data analysis workflows independently.
-

THEORY

(Credits 3; Hours 45)

UNIT I: Introduction and descriptive Statistics **12 Hours**

This unit will introduces the foundations of statistics and techniques for summarizing and describing data.

- Definition, scope, and applications of statistics
- Types of data: qualitative and quantitative
- Scales of measurement
- Classification & tabulation of data
- Graphical and visual representations
- Measures of central tendency: mean, median, mode
- Measures of dispersion: range, variance, standard deviation, coefficient of variation
- Skewness and kurtosis: meaning and interpretation

UNIT II: Probability and Probability Distributions **10 Hours**

This unit explores probability concepts and major statistical distributions.

- Basic probability concepts: Addition & multiplication theorems
- Random variables: discrete and continuous variable
- Binomial, Poisson and Normal distributions
- Sampling theory & sampling distributions
- Central Limit Theorem

UNIT III: Correlation and regression **8 Hours**

This unit focuses on analysing relationships between variables.

- Correlation: Pearson and Spearman correlation
- Simple linear regression: model, estimation, interpretation
- Multiple linear regression: assumptions, multicollinearity, model building

UNIT IV: Hypothesis Testing and Non-Parametric Methods **15 Hours**

This unit introduces hypothesis testing frameworks and non-parametric alternatives for non-normal data.

- Concept of hypothesis: null & alternative
- Types of errors, significance levels, p-value
- Parametric tests:
    - z-test
    - t-test (one sample, independent, paired)
    - ANOVA- One way
    - Chi-square test
- Non-parametric tests:
    - Mann–Whitney U test
    - Wilcoxon signed-rank test
    - Kruskal–Wallis test

- Interpretation and reporting of statistical results
- Research Conclusion and recommendation

PRACTICAL

(Credits 1; 30 hours)

1. Data Entry, Coding & Cleaning: Importing data, handling missing values, variable labels, Excel formulas.
2. Descriptive Statistics & Visualization: Mean, Standard Deviation, frequency tables, histograms, boxplots (Excel + SPSS).
3. Cross-Tabulation & Chi-Square Test: PivotTables in Excel; Crosstabs in SPSS.
4. Correlation Analysis: Pearson & Spearman correlations; scatterplots.
5. Simple Linear Regression: Trendline in Excel; Regression output in SPSS.
6. Multiple Regression: Model summary, coefficients, interpretation using SPSS.
7. t-Tests: Independent, paired, and one-sample t-tests in SPSS.
8. ANOVA (One-way & Two-way): Running ANOVA and post-hoc analysis.
9. Non-Parametric Tests: Mann-Whitney, Wilcoxon, Kruskal–Wallis in SPSS.
10. Report Generation & Interpretation
11. Preparing APA-style tables, graphs, and interpretations in Excel/SPSS.

Essential Readings:

UNIT I

This unit describes the foundations of statistics and techniques for summarizing and describing data.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.). Pearson Prentice Hall.
- Bernard, H. R. (2000). *Social research methods: Qualitative and quantitative approaches*. Sage.
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.). CreateSpace Independent Publishing Platform.
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*. Wiley.

UNIT II

This unit deals with the probability concepts, rules of probability, discrete and continuous distributions (Binomial, Poisson, Normal).

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).

- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*.

UNIT III

This unit focuses on relationship between variables, correlation coefficients, simple and multiple regression, regression assumptions.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Muijs, D. (2004). *Doing quantitative research in education with SPSS*. Sage.

UNIT IV

The unit deals with statistical inference such as t-tests, ANOVA, Chi-square, non-parametric tests (Mann-Whitney, Wilcoxon, Kruskal-Wallis), decision making.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*.
- Muijs, D. (2004). *Doing quantitative research in education with SPSS*.

Suggested Readings

- Field, A. (2025). *Discovering Statistics Using IBM SPSS Statistics* (6th ed.). Sage.
- Kalyanaraman, K., Ramanathan, H. N., & Harikumar, P. N. (2025). *Statistical Methods for Research: A Step-by-Step Approach Using IBM SPSS*. Atlantic Publishers.
- Healey, J. F., & Donoghue, C. (2021). *Statistics: A Tool for Social Research and Data Analysis* (11th ed.).

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

COMMERCIAL FABRICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Commercial Fabrics	4	3	1	0	As per admission criteria	Nil

Learning Objectives

- To develop a foundational understanding of textile fibres, yarns, and fabric construction methods.
- To enhance the knowledge of commercially available fabrics, their properties, and identification techniques.
- To analyse fabric performance, finishes, and suitability for different end uses.
- To equip the students with skills to select appropriate fabrics based on structure, appearance, cost, and application.

Learning Outcomes

Students will be able to:

- Understand the fundamental components, structure, and construction of different fabrics.
- Identify and distinguish between various woven, knitted, non-woven, and traditional Indian textiles.
- Analyse fabric properties, finishes, and end uses for appropriate selection in apparel and textiles.
- Apply practical knowledge to evaluate fabric samples, market options, and industry trends.

THEORY
(Credits 3; Hours 45)

UNIT I: Components of Fabric Structure **10 Hours**

- Fibres and yarns
- Methods of fabric construction
- Fabric finishing: dyeing, printing, and functional/aesthetic finishes
- Sustainability and chemical compliance standards (OEKO-TEX, REACH, GOTS, GRS, BCI, Blusign, RCS)

UNIT II: Commercially Important Woven Fabrics – Identification, Properties & End Uses **12 Hours**

- Cellulosic fabrics: Mulmul, Voile, Organdy, Cambric, Poplin, Cotton, Canvas, Denim, Casement, Terry, etc.
- Silk and wool fabrics: Silk crepe, Georgette, Chiffon, Organza, Satin, Taffeta, Tweed, Tussar, Wool twill, etc.
- Man-made and blended fabrics: Art silk, Lycra blends, Polyester, Viscose, Moss crepe, Georgette, etc.

UNIT III: Commercially Important Knitted & Non-Woven Fabrics – Identification, Properties & End Uses **12 Hours**

- Knitted fabrics: Terry knit, Jersey, Rib knit, Interlock knit, Piqué, Velour, etc.
- Non-woven fabrics: Types, weights, and applications
- Others: Leatherette, Suede

UNIT IV: Traditional Indian Fabrics – Identification, Characteristics & Uses **11 Hours**

- Embroideries: Kantha, Phulkari, Chikankari, Kasuti, Kutch, etc.
- Woven fabrics: Brocade, Jamdani, Baluchari, Chanderi, Maheshwari, Kanjeevaram, etc.
- Dyed/Printed fabrics: Bandhani, Kalamkari, Ikat, Patola, Dabu prints, Ajrakh prints, etc.

TUTORIAL

(Credits 1; 15 hours)

1. Examine and differentiate various natural, man-made, and blended fibres and yarns based on appearance, feel, and basic properties.
2. Collect and classify commonly used woven fabrics, noting their weave type, characteristics, and typical applications.
3. Assemble samples of knitted fabrics and identify structural variations such as single jersey, rib, interlock, and pique.
4. Gather samples of non-woven materials and study their methods of manufacture, features, and end uses.
5. Observe and document different construction methods such as weaving, knitting, braiding, and felting, highlighting their influence on fabric performance.
6. Explore selected Indian traditional fabrics, understanding their motifs, techniques, regional specialties, and cultural significance.
7. Prepare and present a brief report analysing selected fabrics in terms of fibre content, construction, properties, finishes, and suitable end-uses

Essential Readings

UNIT I

This unit covers the basic building blocks of textiles including fibres, yarns, fabric construction methods, and finishing processes. Emphasis is also placed on sustainability, eco-labels, and chemical compliance standards followed in the Indian and global textile industry

- Corbman, B. P. (2016). Textiles: Fiber to fabric (6th ed.). McGraw-Hill Education.
- Kadolph, S. J. (2017). Textiles (12th ed.). Pearson Education.
- Gohl, E. P. G., & Vilensky, L. D. (2013). Textile science: An explanation of fibre properties (2nd ed.). CBS Publishers & Distributors.
- Majumdar, P. K. (2010). Textile fibres. PHI Learning.
- Fletcher, K., & Grose, L. (2012). Fashion & sustainability: Design for change. Laurence King.

UNIT II

This unit introduces commonly used woven fabrics made from natural, man-made, and blended fibres, focusing on their identification, properties, and suitability for various end uses in apparel and home furnishings.

- Hatch, K. L. (2018). Textile science. Bloomsbury Publishing.
- Tortora, P. G., & Johnson, I. (2019). The Fairchild books dictionary of textiles (9th ed.). Bloomsbury.
- Banerjee, S. (2011). Textile science fundamentals. PHI Learning.
- Corbman, B. P. (2016). Textiles: Fiber to fabric. McGraw-Hill Education.

UNIT III

This unit deals with basic knit structures, types of knitted fabrics, non-woven textiles, and their properties, applications, and performance characteristics in apparel and technical textiles.

- Spencer, D. J. (2018). Knitting technology (4th ed.). Woodhead Publishing.
- Russell, S. (2016). Handbook of nonwovens. Woodhead Publishing.
- Anbumani, N. (2007). Knitting fundamentals, machines, structures and developments. New Age International.
- Ajmeri, J. R., & Ajmeri, C. J. (2016). Nonwoven textiles: Technology. New India Publishing Agency.
- Hearle, J. W. S., & Morton, W. E. (2008). Physical properties of textile fibres. Woodhead Publishing.

UNIT IV

This unit focuses on traditional Indian textiles including embroideries, woven fabrics, and surface-designed textiles, highlighting regional diversity, techniques, cultural importance, and contemporary relevance.

- Chattopadhyay, K. (2019). Indian textiles. Wiley Eastern.
- Biswas, K. (2018). Textiles of India. National Book Trust.
- Dhamija, J. (2004). Craft traditions of India. National Handicrafts & Handlooms Museum.

- Varadarajan, L. (2015). Indian costume and textiles. Prentice Hall of India.

Suggested Readings

- Jain, J., & Jain-Neubauer, J. (2015). *The spectrum of Indian textiles.* Niyogi Books
- Gillow, J., & Barnard, N. (2015). *Traditional Indian textiles*. Thames & Hudson.
- Rastogi. D(Ed)and Chopra S. (Ed)(2017) *Textile Science*, India : Orient Black Swan.
- Sekhri S. (2011) *Textbook of Fabric Science: Fundamentals to Finishing*, Delhi: PHI Learning

DISCIPLINE SPECIFIC ELECTIVE COURSE
WOMEN'S WEAR: CONCEPT TO CREATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Women's Wear: Concept to Creation	4	2	0	2	As per admission criteria	Nil

Learning Objectives

- To gain an understanding and knowledge of the industry involved in women's wear.
- To develop skills in designing a theme-based collection of garments for women's wear.
- To apply advanced pattern making and construction techniques for women's wear.
- To understand the role of fashion accessories in complementing the outfit.

Learning Outcomes

The students would be able to:

- Understand the market involved in women's wear.
- Comprehend the components of design and their application for line development
- Independently design a line for women's fashion wear
- Describe the role of fashion accessories in defining the overall look.

THEORY
(Credit 2; 30 Hours)

UNIT I: Introduction to Women's Wear **6 Hours**

This unit introduces the student to the growth and development of women's wear industry.

- Scope and significance of Women's wear within the fashion industry
- Classification of women's wear: western/ethnic / fusion / contemporary; formal/casual; occasion wear, resort wear, intimate wear, maternity, plus-size etc.
- Key eras shaping women's fashion and global influences
- Market segmentation in women's wear based on pricing strategies, brand tiers (Haute couture, luxury, diffusion, high street etc.)

UNIT II: Research, Trends & Concept Development **10 Hours**

This unit covers the process of trend forecasting and the understanding of consumer profiles. It also helps in building the concept story for line development.

- Trend forecasting- steps, drivers of change: socio-cultural, technological, economic, environmental, forecasting agencies, fashion seasons
- Consumer types and profiling based on demographics, psychographics, lifestyle etc.
- Building a concept story for line development- design idea/inspiration, mind map, theme/mood board
- Translating concept into colours, silhouettes, design details, textures, fabrics

UNIT III: Product Development and Presentation **6 Hours**

This unit focuses on line planning and design sketching, leading to product development and its presentation.

- Line planning and range development
- Pattern making, fabric sourcing, garment prototype and fit analysis, garment costing
- Design documentation and presentation of line/collection: Lookbooks, runway, digital presentation, collection storytelling, visual strategies

UNIT IV: Fashion Accessories for Women **8 Hours**

This unit gives an overview of various accessories used to complete an overall look in women's fashion.

- Scope and role of accessories in completing the look
- Types of accessories- bags, purses, footwear, scarves and stoles, hats, gloves, hosiery, jewellery, watches and belts
- Materials and components used in accessories

PRACTICAL
(Credit 2; 60 Hours)

1. Design inspiration for line development and working on a mind map
2. Development of Theme/mood board and story board including colours, silhouettes, textures, fabrics, motifs, design details
3. Line planning, customer profile, sketching, and finalization of design collection based on the theme
4. Developing patterns for two of the above selected designs using flat pattern making or draping and planning pattern layout, preparation of Teck-pack
5. Fabric sourcing, cutting and stitching of the garments, incorporating advanced sewing skills
6. Fit evaluation and finalization, portfolio presentation

Essential Readings

UNIT I:

This unit introduces students to the growth, scope, and importance of women's wear within the fashion industry. It covers the classification of women's apparel based on style, function, and consumer needs, including western, ethnic, fusion, formal, casual, and specialized categories. The unit examines key historical eras and global influences shaping women's fashion. It also provides an understanding of market segmentation, pricing strategies, and brand tiers such as haute couture, luxury, diffusion, and high-street fashion.

- Brown, P., & Rice, J. (2014). *Ready to wear apparel analysis* (4th ed.). Pearson Education. New Delhi
- Dickerson, K. G. (2007). *Inside the fashion business*. Upper Saddle River, NJ: Pearson Education, Inc.
- Frings, G. S. (2014). *Fashion: From Concept to Consumer* (10th ed.). Pearson Education.
- Tate, S. L., & Edwards, M. S. (2003). *Inside fashion design* (5th ed.). Pearson Education, Inc..

UNIT II:

This unit focuses on the research-driven design process essential for women's wear development. Students learn the principles of trend forecasting, including drivers of change and fashion cycles. The unit emphasizes consumer profiling through demographic, psychographic, and lifestyle analysis. It also develops skills in concept creation, enabling students to translate inspiration into cohesive design ideas using mood boards, colour stories, silhouettes, fabrics, and textures.

- Dragt, E. (2017). *How to Research Trends: Move Beyond Trendwatching to Kickstart Innovation*. BIS Publishers.
- Raymond, M. (2010). *The Trend Forecaster's Handbook*. Laurence King Publishing.
- Renfrew, E., & Renfrew, C. (2009). *Basics fashion design 04: Developing a collection*. Switzerland: Ava Publishing SA.
- Stamper, A. A., Sharp, S. H., & Donnell, L. B. (2005). *Evaluating apparel quality*. New York, NY: Fairchild Fashion Group.

UNIT III:

This unit introduces students to the product development process from concept to finished collection. It covers line planning, range development, and design translation into garments. Students gain foundational knowledge of pattern making, fabric sourcing, prototyping, fit analysis, and garment costing. The unit also emphasizes professional presentation techniques, including design documentation, lookbooks, collection storytelling, and digital or runway presentations.

- Armstrong, H. J. (2019). *Patternmaking for Fashion Design* (6th ed.). Pearson Education
- Brannon, E. L. (2011). *Designer's guide to fashion apparel*. New York, NY: Fairchild Books.
- Glock, R. E., & Kunz, G. I. (2014). *Apparel Manufacturing: Sewn Product Analysis* (5th ed.). Pearson.
- Hopkins, J. (2013). *Fashion Design: The Complete Guide*. AVA Publishing.
- San Martín, M. (2009). *Field guide: How to be a fashion designer*. Beverly, MA: Rockport Publishers.

UNIT IV:

This unit provides an understanding of the role of fashion accessories in enhancing and completing women's wear. It explores various types of accessories, including bags, footwear, scarves, jewellery, belts, and watches. The unit introduces materials, components, and construction considerations used in accessory design. Emphasis is placed on the aesthetic, functional, and market relevance of accessories within contemporary women's fashion.

- Dhir, Y.J. (2024). *Fashion Accessories: A Complete Guide to Raw Materials, Construction Methods and Styles* (1st ed.). CRC Press.
- Jones, S. J. (2011). *Fashion Design: Accessories*. Laurence King Publishing.
- Lau, J. (2021). *Basics fashion design 09: Designing accessories: Exploring the design and construction of bags, shoes, hats and jewellery*. Bloomsbury Publishing.
- Tortora, P. G., & Abling, B. (2003). *Encyclopaedia of Fashion Accessories*. Fairchild Books.

Suggested Readings

- Abling, B. and Maggio K. (2008) Integrating Draping, Drafting and Drawing, ISBN: 9781563674860, Fairchild books.
- Aldrich, W. (2008) Metric Pattern Cutting for Women's Wear, ISBN 10: 1405175672 / ISBN 13: 9781405175678, Wiley Blackwell Publication.
- Crawford. C.A. (2008), A Guide to Fashion Sewing, Fourth Edition. Fairchild Publications, Inc., New York.
- Crawford. C.A. (2018), The Art of Fashion Draping, ISBN: 9781501330292, Fairchild books.
- DiMarco, S., (2010) Draping Basics, ISBN: 9781563677366, Fairchild books.
- Fogg, M. (2013) Fashion The Whole Story. Thames & Hudson Ltd., London.
- Shoben, M.M. and Ward, J.P. (2000) Pattern Cutting and Making Up Volume 2, Revised Edition, LCFS Fashion Media

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
TECHNICAL TEXTILES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Technical Textiles	4	3	1	0	As per admission criteria	Nil

Learning Objectives

- To develop an understanding of the concepts, scope, and functional requirements of technical textiles.
- To critically examine the application of technical textiles across diverse sectors such as construction, healthcare, transport, geotechnical engineering, and industry.

Learning Outcomes

Students will be able to:

- Understand the properties and performance of a range of technical textiles.
- Analyse appropriate uses for a variety of fabrics, yarns and fibres in various areas like construction, healthcare, transport etc.
- Generate and develop creative ideas for the use of technical textiles.

THEORY

(Credits 3; Hours 45)

UNIT I: Introduction to Technical Textiles **5 Hours**

This unit covers the fundamentals of technical textiles, including their importance, scope and classification.

- Overview of technical textiles
- Importance and scope
- Classification of technical textiles

UNIT II: Technical Fibers, Yarns, fabrics and composites **16 Hours**

This unit highlights the types, properties and structural forms of technical fibers, yarns and fabrics, along with fundamentals of textile composites and their manufacturing processes.

- Technical fibers: Synthetic, Regenerated and Natural.

- Technical yarns: Filament, Spun and Composite
- Technical fabrics: woven, knitted, nonwoven, braided, laminated, coated, multilayer and 3D structures for technical applications.
- Textile composites: reinforcement textiles, matrix materials, composite manufacturing processes.

UNIT III: Application Area. **16 Hours**

This unit provides an overview of major technical textile sectors, emphasizing functional requirements and end-use applications.

- Agrotech
- Buildtech
- Clothtech
- Meditech
- Oekotech
- Protech
- Indutech
- Packtech
- Hometech
- Geotech
- Sporttech
- Mobiltech
- Military textiles

Unit IV: New Developments in Technical Textiles **8 Hour**

Explores recent innovations and their applications.

- Smart textiles
- Shape-memory, phase change material (PCM)
- Energy harvesting textiles
- Wearable sensors and actuators
- E-textiles and conductive materials

TUTORIAL

(Credits 1; Hours 15)

1. Fabric sourcing of various technical textile fabrics

Activity: Market/industry visits to source samples of technical textiles. Students will compare sourced fabrics based on construction, performance, cost, and prepare a brief analytical report.

2. Study of geometrical parameters of industrial textile fabrics

Discussion: Understanding yarn density, fabric thickness, porosity, cover factor, and other geometrical parameters related to technical performance in technical textiles.

Activity: Laboratory evaluation of geometrical parameters for selected technical textile fabrics. Students will measure and interpret results to relate structure with performance.

3. Field visit on technical textile materials

Activity: Field/industry visits to technical textile manufacturing or trading units to observe materials, technologies, and applications. Students will prepare a detailed visit report.

4. Project work on any one Area of technical textiles

Discussion: Selection of a focused topic in technical textiles material, process, product innovation, testing, or application area to develop analytical and research skills.

Activity: Independent project work involving literature survey, data collection, experimentation (if applicable), and report writing. Students will present findings at the end of the semester.

Essential Readings

UNIT I

This unit introduces the fundamental concepts of technical textiles, emphasizing textiles developed primarily for functional and performance-based applications rather than decorative use. It provides an overview of technical textiles, their evolution, and distinguishing characteristics, followed by a discussion on their importance and expanding scope in various sectors such as healthcare, agriculture, construction, transportation, defense, and environmental protection. The unit also explains the classification of technical textiles based on end-use applications, enabling students to develop a clear conceptual understanding of the field and laying a strong foundation for advanced study in technical fibers, yarns, fabrics, and related technologies.

- Horrocks, A. R., & Anand, S. C. (Eds.). (2000). *Handbook of technical textiles (chapter 1)*. Elsevier.
- Horrocks, A. R. and Anand, S. C. (2015) Handbook of Technical Textiles, second edition, volume 1: technical textile processes, The Textile Institute, Woodhead Publishing.

UNIT II

This unit focuses on the types, properties, and structural forms of materials used in technical textiles, beginning with an in-depth study of technical fibers including synthetic, regenerated, and natural fibers and their performance characteristics. It covers technical yarns such as filament, spun, and composite yarns, followed by technical fabrics produced through weaving, knitting, nonwoven, braided, laminated, coated, multilayer, and three-dimensional structures for specialized applications. The unit also introduces textile composites, emphasizing reinforcement textiles, matrix materials, and fundamental composite manufacturing processes, enabling students to understand the material–structure–property relationship in technical textile products.

- Bunsell, A. R. (2009) Handbook of Tensile Properties of Textile and Technical Fibres, 1st Edition, Woodhead Publishing Series in Textiles.
- Horrocks, A. R., & Anand, S. C. (Eds.). (2000). *Handbook of technical textiles.* Elsevier.

UNIT III

This unit provides a comprehensive overview of the major application sectors of technical textiles, ranging from Agrotech to Military textiles, with emphasis on functional requirements, performance parameters, and end-use applications. It covers diverse areas such as agriculture, construction, medical, environmental protection, personal and industrial safety, packaging, home furnishings, geotechnical engineering, sports, transportation, and defense. Through this unit, students gain insight into how technical textiles are designed and selected based on specific end-use needs and regulatory requirements across different industrial sectors.

- Anand, S.C., Kennedy, J F., Miraftab, M., and Rajendran, S. (2005)Medical Textiles and Biomaterials for Healthcare, Woodhead Publishing Series in Textiles.
- Bartels, V. (2011) Handbook of Medical Textiles, 1st Edition, Woodhead Publishing Series in Textiles.
- Horrocks, A. R., & Anand, S. C. (Eds.). (2000). *Handbook of technical textiles. (chaps 13-18)* Elsevier.
- https://gphisar.ac.in/wp-content/uploads/2022/09/Technical-Textiles-5th-Sem-TT-Study-M.pdf
- https://www.scribd.com/document/696654830/Technical-Textile

UNIT IV

This unit explores recent advancements and emerging technologies in the field of technical textiles, focusing on innovative materials and smart systems. It introduces smart textiles, shape-memory materials, phase change materials (PCM), energy-harvesting textiles, wearable sensors and actuators, and e-textiles with conductive materials. The unit highlights the role of interdisciplinary research and innovation in enhancing functionality, comfort, monitoring, and sustainability, preparing students to understand future trends and research opportunities in technical textiles.

- Tasaltin, N., Nnamchi, P. S., & Saud, S. (Eds.). (2020). *Advanced Functional Materials (chapter 14)*. BoD–Books on Demand.
- Sharma, S., Shukla, S. K., Singh, A., Govender, K. K., & Govender, P. P. (2025). E-Textiles in Biomedicine: Real Time Sensing, Energy Storage, and Therapeutic Applications. *Advanced Materials Interfaces*, e00672. https://doi.org/10.1002/admi.202500672
- Pandey, A., Tiwari, K. P., & Misra, R. Smart Materials for Next-Generation Electronics and Energy Storage.
- Younes, B. (2023). Smart E-textiles: A review of their aspects and applications. *Journal of Industrial Textiles*, *53*, 15280837231215493.https://doi.org/10.1177/1528083723121549

- De Rossi, D., Carpi, F., & Galantini, F. (2009). Functional materials for wearable sensing, actuating and energy harvesting. *Advances in Science and Technology*, *57*, 247-256. https://doi.org/10.4028/www.scientific.net/AST.57.247
- Bunsell, A. R. (2009) Handbook of Tensile Properties of Textile and Technical Fibres, 1st Edition, Woodhead Publishing Series in Textiles.
- Chapman, R. (2012) Smart Textiles for Protection, Woodhead Publishing Series in Textiles.

Suggested Readings

- Horrocks, A. R. and Anand, S. C. (2015) Handbook of Technical Textiles, second edition, volume 1: technical textile processes, The Textile Institute, Woodhead Publishing.
- Horrocks, A. R. and Anand, S. C. (2016) Handbook of Technical Textiles, second edition, volume 2: technical textile applications, The Textile Institute, Woodhead Publishing.
- Langenhove, L.V. (2007) Smart Textiles for Medicine and Healthcare: Materials, Systems and Applications, Woodhead Publishing Series in Textiles, 1st Edition.
- Tao, X. (2001) Smart Fibres, Fabrics and Clothing: Fundamentals and Applications, Woodhead Publishing Series in Textiles.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
PSYCHOLOGY OF FASHION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Psychology of Fashion	4	3	1	0	As per admission criteria	Nil

Learning Objectives

- Understand foundational psychological theories related to dress and appearance.
- Analyse how clothing influences cognition, emotions, and social interactions.
- Evaluate psychological drivers of fashion consumption.
- Examine ethical and digital fashion behaviour through psychological frameworks.
- Apply psychological insights to fashion design, branding, merchandising, and consumer experience.

Learning Outcomes

The students would be able to:

- Explain major psychological theories related to dress and appearance.
- Analyse how identity, personality, culture, and society shape fashion choices.
- Evaluate consumer motivations behind buying, adopting, and rejecting fashion.
- Apply psychological principles to fashion marketing, branding, and sustainability.
- Interpret clothing as a tool for personal expression, communication, and behaviour change.

THEORY

(Credits 3; Hours 45)

UNIT I: Foundation of Fashion Psychology **13 Hours**

This unit will introduce the various functions clothes serve. The unit will focus on various psychological theories that play an important part in clothing choices

- Functions of clothing and fashion
  - Material functions (Protection, modesty and concealment, immodesty and attraction)

- Cultural functions (Communication, individualistic expression, social worth or status, definition of social role, economic worth or status, political symbol, religious and social ritual, recreation etc.)

- Core Psychological Theories
  - Self-concept and identity
  - Social comparison theory
  - Goffman's impression management
  - Clothing and body image
  - Appearance management and self-esteem

UNIT II: Consumer Psychology and fashion adoption **10 Hours**

This unit introduces key factors that govern consumers towards fashion adoption. The unit also highlights how the knowledge of consumer psychology is used for marketing of clothes.

- Motivation, perception, learning & attitudes in fashion consumption
- Fashion adoption & diffusion of innovations
- Hedonic vs utilitarian consumption
- Advertising psychology: persuasion, imagery, symbolism
- Digital fashion psychology (social media, influencers)
- Luxury consumption psychology
- Impulse buying & compulsive buying

UNIT III: Applied Fashion Psychology **12 Hours**

This unit focuses on analyzing consumer behavior within social and cultural psychological frameworks.

- Fashion therapy & clothing for mental well-being
- Psychological barriers to sustainable fashion
- Cognitive dissonance & ethical decision-making
- Behaviour change models (TPB, nudging, habits)
- Anti-fashion, minimalism, slow fashion
- Fashion for special needs populations (e.g., inclusive design)

UNIT IV: Virtual Dressing and Digital Fashion Psychology **10 Hours**

This unit examine digital fashion behaviour through psychological frameworks. Dress and body through virtual view and virtual fit.

- Dress and perception of virtual 3D self-images: comfort with body scanning
- Imaginary self in virtual world
- Virtual try-on influencing purchase decisions.
- AI-driven styling and psychological profiling.

TUTORIAL
(Credits 1; 15 Hours)

1. Class Discussion: "Why do people dress the way they do?" (Using real examples from campus/industry)
2. Mini Case Analysis:
   a. Analyse clothing choices of a public figure using theory of symbolic interactionism.
   b. Analyse why luxury consumers pay the "premium" using psychological theories.
3. Activity – Clothing Diary: Students document their outfits for 5 days and note psychological motives each day.
4. Short Reflection: Write 300 words on how a specific clothing item affects your confidence (enclothed cognition).
5. Group Presentation: Present "Functions of Clothing in Different Cultures."
6. Brand Psychology Audit: Analyse a fashion brand's personality and emotional appeal.
7. Sustainability Dissonance Task: Reflect on a time one bought something unsustainable—identify psychological conflict.
8. Slow Fashion Diary: Track clothing usage for 10 days to study personal consumption.
9. Virtual Fashion Avatar Activity: Students design digital avatars and analyse psychological choices behind features.
10. Students experience two contrasting avatar appearances (professional vs. casual, bold vs. minimal). They write a short reflection on how their behaviour or confidence changed.
11. AI Stylist Activity: Students test an AI-based styling tool and evaluate how personalization influences feelings of identity validation or enhancement.

Essential Readings

UNIT I

This unit introduces psychological, social, and cultural functions of clothing, focusing on identity, self-concept, body image, and impression management.

- Kaiser, S. B. (2012). Fashion and cultural studies (2nd ed.). Bloomsbury Academic.
- Barnard, M. (2014). Fashion theory: An introduction (2nd ed.). Routledge.
- Banerjee, S. (2018). Psychology of fashion. PHI Learning, India.
- Mukherjee, A. (2020). Clothing, identity and social meaning in India. Indian Journal of Social Psychology, 31(2), 145–158.

UNIT II

This unit focuses on consumer motivation, perception, fashion adoption, diffusion of trends, advertising psychology, digital influence, and luxury consumption.

- Solomon, M. R. (2018). Consumer behaviour: Buying, having, and being (12th ed.). Pearson Education.
- Rogers, E. M. (2003). Diffusion of innovations (5th ed.). Free Press.

- Easey, M. (2009). Fashion marketing (3rd ed.). Wiley-Blackwell.
- Schiffman, L. G., & Wisenblit, J. (2019). Consumer behaviour (12th ed.). Pearson.
- Batra, R., & Kazmi, S. H. H. (2019). Consumer behaviour (3rd ed.). Excel Books, New Delhi.
- Jain, S., & Pant, S. (2021). Digital fashion consumption among Indian youth. Journal of Fashion Marketing and Management, 25(3), 465–480.

UNIT III

This unit applies psychological theories to fashion for mental well-being, sustainability, ethical decision-making, behaviour change, and inclusive design.

- Fletcher, K. (2014). Sustainable fashion and textiles: Design journeys (2nd ed.). Routledge.
- Gwilt, A. (2020). A practical guide to sustainable fashion. Bloomsbury Visual Arts.
- Joy, A., Sherry, J. F., Venkatesh, A., Wang, J., & Chan, R. (2012). Fashion Theory, 16(3), 273–295.
- Desai, R., & Shukla, P. (2019). Fashion and sustainability in India. Bloomsbury India.
- Narang, R. (2020). Sustainable fashion behaviour in India. Journal of Textile and Apparel Studies, 4(1), 22–30.
- Kawamura, Y. (2016). Doing research in fashion and dress. Bloomsbury Academic.

UNIT IV

This unit explores psychological responses to virtual fashion, digital self-image, virtual try-on, AI-driven styling, and technology-mediated fashion behaviour.

- Kim, J., & Forsythe, S. (2008). Adoption of virtual try-on technology. Journal of Interactive Marketing, 22(2), 45–59.
- Choi, T. M. (2020). Artificial intelligence and big data analytics for fashion industry. Springer.
- Pine, B. J., & Gilmore, J. H. (2011). The experience economy. Harvard Business Review Press.
- McKinsey & Company. (2022). The state of fashion: Technology and digital transformation.
- Narkhede, B. E., & Bhattacharya, S. (2021). Digital fashion retail transformation in India. International Journal of Fashion Design, Technology and Education, 14(3), 385–395.

Suggested Readings

- Almond, K. (2017). *Basics Fashion Design: Draping*. Bloomsbury Publishing.
- Kim, J. H., & Lennon, S. (2013). “Emotional and Cognitive Reactions in Online Shopping.” *Psychology & Marketing*.
- McCracken, G. (1986). "Culture and Consumption." *Journal of Consumer Research*.

- Vigneron, F., & Johnson, L. (2004). “Luxury Brand Consumption Behavior.” *Journal of Brand Management*.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

HISTORY OF FASHION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
History of Fashion	4	3	1	0	As per admission criteria	Nil

Learning Objectives

- To study the development of costume from ancient times to the 20th century, considering socio-cultural and technological changes.
- To create awareness and understanding of the styles and special features in costume through the ages.

Learning Outcomes

The students would be able to:

- Trace the evolution of western costume.
- Identify different styles and special features in costume through the ages.
- Draw inspiration from the long-established styles for designing.

THEORY
(Credits 3; Hours 45)

UNIT I: Importance of World Textiles and Costumes in Historical Perspective. 6 Hours

This unit outlines the historical perspective of the origin of textiles and costumes.

- Sources of information for historic costumes
  - Archaeological excavations and discoveries
  - Ancient literature, chronicles and archival records
  - Museums and art galleries
  - Sculpture and pottery
- The origin of costume
- Costume through the ages- inspiration for designing and styling

UNIT II: Costumes in Early Civilizations **10 Hours**

This unit focuses on the origin and evolution of Costumes in ancient civilizations (300BC-300 AD)

- Mesopotamia
- Egypt
- Greece
- Rome
- India

UNIT III: Costumes in the Middle Ages **13 Hours**

This unit aims to explore the advancements in textiles and costumes during the Middle Ages.

- The Feudal ages (1100 AD- 1300AD)
- The late Middle Ages (1300AD-1500AD)
- Renaissance: Italy, France, England (15th-16th century)
- India: Mughal period

UNIT IV: Costumes in 17th to 20th century **16 Hours**

This unit highlights the changes and developments in European costumes through different eras from 17th to 20th century reflecting social milieu and technological advancements.

- Baroque and Rococo periods – France and England
- French Revolution and thereafter (1790AD-1900AD)
- The Directoire and Empire period (1790AD-1820AD)
- The Romantic period (1820A.D-1850AD)
- The Crinoline period (1850 AD-1869AD)
- The Bustle period (1870 AD- 1900 AD)
- Early Twentieth Century

TUTORIAL

(Credit 1; Hours 15)

- To make a report or presentation on any two design collections of eminent designers inspired by historic costumes.
- To showcase costumes styles of the ancient civilizations through draping technique.
- To discuss and design garments and accessoies inspired from any one ancient civilization
- To make a presentation on any one prominent component of a period costume with reference to raw material, construction, embellishments/styling, use etc.
- Case study of a historical figure (E.g. Cleopatra, Queen Elizabeth I, Emperor Akbar,

Napoleon, Louis XIV etc.) for analyzing their costumes with reference to textile materials and colours used, styling of garments, silhouette, accessories etc.

- To make a Presentation on highlighting development in textiles and costumes during 17th to early 20th century with respect to the influence of socio-cultural, technological factors on styling of costumes.

Essential Readings

UNIT I

This unit highlights the historical perspective of the origin of textiles and costumes. It covers the study of various sources of information on the history of costumes and fashion. It further elaborates on the evolution of costume styles through the ages.

- Black, J. A. and Garland M. (1978) A History of Fashion, London: Orbis Publishing Ltd. (Chapter 1)
- Tortora, P. G., & Marcketti, S. B. (2021). Survey of historic costume: A history of Western dress (7th ed.). Fairchild Books. (Chapter 1)
- Cole, D. J., & Deihl, N. (2015). The history of modern fashion: From 1850. Laurence King Publishing.

UNIT II

This unit covers the details of costumes prevalent in the ancient civilisations, from 300 BCE to 300 AD. The costumes and fashion prevalent in the Mesopotamian, Egyptian, Greek, Roamn and Indian Civilisations are discussed in details.

- Alkazi, R. (1983) Ancient Indian Costume, Art Heritage Books.
- Black, J. A. and Garland M. (1978) A History of Fashion, London: Orbis Publishing Ltd. (Chapter 2 - 6)
- Singh, M. (2017). Traditional Indian costumes and textiles. National Institute of Fashion Technology (Chapter 1-5)
- Tortora, P. G., & Marcketti, S. B. (2021). Survey of historic costume: A history of Western dress (7th ed.). Fairchild Books. (Chapter 2 & 3)

UNIT III

This unit elaborates on the developments in fashion during the Middle Ages across the feudal ages, late Middle Ages, Renaissance period and the Mughal period.

- Black, J. A. and Garland M. (1978) A History of Fashion, London: Orbis Publishing Ltd. (Chapter 7 - 12)
- Tortora, P. G., & Marcketti, S. B. (2021). Survey of historic costume: A history of Western dress (7th ed.). Fairchild Books. (Chapter 4 - 6)
- Singh, M. (2017). Traditional Indian costumes and textiles. National Institute of Fashion

Technology (Chapter 9)
- Kumar, R. (2010). Costumes and textiles of royal India. Christie's Books.

UNIT IV

This unit highlights the changes and developments in European fashion through different eras from 17th to 20th century discussing with reference to social milieu and technological advancements.

- Black, J. A. and Garland M. (1978) A History of Fashion, London: Orbis Publishing Ltd. (Chapter 13- 21)
- Cole, D. J., & Deihl, N. (2015). The history of modern fashion: From 1850. Laurence King Publishing.
- Tortora, P. G., & Marcketti, S. B. (2021). Survey of historic costume: A history of Western dress (7th ed.). Fairchild Books. (Chapter 7 - 12)

Suggested Readings

- Breward, C., Lemire, B., & Riello, G. (Eds.). (2023). The Cambridge Global History of Fashion, Volume 1: From antiquity to the 1800s. Cambridge University Press.
- Cumming, V. (2004) Understanding Fashion History, London: Batsford.
- Evans, C., & Nguyen, E. (Eds.). (2023). Fashion history: A global view (2nd ed.). Bloomsbury.
- Lester, K.M. (1956) Historic Costume, llinois: Chas A Bennett Co. Inc.
- Peacock, J. (2007) The Chronicle of Western Costume, Thames and Hudson.

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

Skill Based Courses

SKILL BASED COURSE

FASHION ILLUSTRATION: TECHNIQUES AND APPLICATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Fashion Illustration: Techniques and Application	2	0	0	2	As per admission criteria	Nil

Learning Objectives

- Describe the basics of fashion illustration, including proportion, pose, and facial features.
- Demonstrate various illustration techniques, such as drawing and painting
- Illustrate rendering techniques for different fabrics, textures, and details.
- Propose various styles in fashion illustration.

Learning Outcomes

The students would be able to:

- Sketch the figure in correct proportion and various poses.
- Translate various illustration techniques to develop fashion figures.
- Create visually appealing and commercially viable illustrations that showcase fashion designs, textures, and details.
- Develop personal style of fashion illustration.

PRACTICAL
(Credits: 2; Hours 60)

UNIT I: Introduction to Fashion Illustration and its Techniques **18 Hours**

- Understanding the basics of proportion, pose, and facial features
- Introduction to various illustration techniques and mediums
- Drawing the fashion figure, including proportion and pose
- Practicing various drawing techniques, such as line work, shading, and texture
- Introduction to various mediums, including pastels, pencil, water and poster colours

UNIT II: Illustrating Fabrics and Textures **14 Hours**

- Illustrating different fabrics, including woven and knit textures
- Practicing various techniques for rendering texture and details

- Introduction to illustrating accessories, such as jewellery, footwear and handbags

UNIT III: Understanding Poses **14 Hours**

- Introduction to illustrating movement and gesture
- Practicing various techniques for conveying mood and atmosphere

UNIT IV: Final Project **14 Hours**

- Creating a final portfolio that showcases skills and personal style

Essential Readings

- Abling, B. (1988) Fashion sketch book, Om books International
- Brambatti, M. (2017) Fashion Illustration & Design, Promopress
- Ireland, Patrick John, (2005), Figure templates for fashion illustration, Batsford Ltd
- Hagen, Kathryn, (2005) Fashion illustration for designers, Pearson Prentice Hall, NJ
- Takamura, Z. (2012) Fashion Illustration Techniques, Rockport Publishers

Suggested Readings

- Tate, Sharon Lee, 1982 Complete Book of Fashion Illustration, Barnes & Noble
- Seaman, Julian, 1996 Fashion Illustration: Basic Techniques
- Hopkins, John, 2010, Fashion Drawing

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

SKILL BASED COURSE

SURFACE DESIGN TECHNIQUES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Surface Design Techniques	2	0	0	2	As per admission criteria	Nil

Learning Objectives

- To describe various surface design techniques.
- To demonstrate different surface design techniques.
- To develop students' creative and problem solving skills.

Learning Outcomes

The students would be able to:

- Identify different design methods like embroidery, ari work and embellishments, color application like painting, dyeing and printing, macrame, braiding and lace making.
- Create different structures using above techniques.
- Develop a product after acquiring skills in design techniques.

PRACTICAL
(Credits 2; Hours 60)

UNIT I: Fabric Manipulation and Embellishment Techniques **24 Hours**

- Cuts and removal of threads
- Folding and pleating
- Gathering and rouching
- Tucking
- Hand-stitching and machine-stitching techniques
- Padding and quilting
- Appliqué, *Ari* work and embroidery
- Beading and sequencing

UNIT II: Dyeing, Printing and Painting Techniques **14 Hours**

- Hand painting: Painting designs directly onto fabric using brushes and paint.

- Tie-dye: Folding and binding fabric to create unique, dyed patterns.
- Shibori: Folding and binding fabric to create intricate, dyed patterns.
- Block and Screen Printing: Creating designs using blocks, screens and ink
- Batik: Using wax and dye to create unique, patterned designs

UNIT III: Thread structure Techniques **10 Hours**

- Macrame
- Braiding
- Lace making (Crochet, Tatting)

UNIT IV: Product development using mixed design exploration techniques. 12 Hours

Essential Readings

- Wolff, C. 1996, The Art of Manipulating Fabric, Krause Publication, Wisconsin
- Juracek, A. Judy, 2000, Soft Surface, Thames & Hudson Ltd.
- Milne D'Aary Jean, 2006, Fabric Left Overs, Octopus Publishing Group Ltd.
- Singer Margo, 2007, Textile Surface Decoration-Silk & Velvet, A&C Black Ltd.

Suggested Readings

- Gunner, J. (2007). Shibori for textile artists. Kodansha America.
- Zedenius, F., & Lightbody, K. (2017). Macramé: the craft of creative knotting for your home. London, Quadrille Publishing.
- Day, L. F. (2008). *Art in needlework*. Lulu. com.
- Higgin, L. (2022). Handbook of embroidery. DigiCat.
- Brown, C. (2013). Embroidered & Embellished: 85 Stitches Using Thread, Floss, Ribbon, Beads & More. C&T Publishing Inc.

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

SKILL BASED COURSE

COMMUNITY OUTREACH IN TEXTILE AND APPAREL SECTOR

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Community Outreach in Textile and Apparel Sector	2	0	0	2	As per admission criteria	Nil

Learning Objectives

- To recognise the significance of textile heritage, sustainability, and contemporary interventions in community engagement.
- To apply hands-on skills to engage communities through textile-based initiatives.
- To design outreach programs that promote awareness, education, and social impact.
- To evaluate the effectiveness of community interaction through workshops, exhibitions, and social initiatives.

Learning Outcomes

The students would be able to:

- Organize and execute textile outreach activities.
- Develop engaging communication strategies for different audiences.
- Analyze and promote sustainable and traditional textile practices through community initiatives.
- Document and evaluate the impact of outreach programs.

PRACTICAL

(Credits 2; Hours 60)

Unit I: Understanding Textile Outreach **8 Hours**

This unit explores community outreach in textiles through field visits and case studies, focusing on artisan empowerment, sustainability, and heritage preservation.

- Introduction to concept of community outreach and engagement
- Field Visit to artisan communities/ upcycling studios/ textile NGOs
- Case studies of successful textile outreach initiatives (any 2)

Unit II: Planning an Outreach Program **16 Hours**

This unit covers identifying target communities, setting outreach objectives, and using storytelling for effective engagement.

- Identifying target communities (Schools, Craft clusters, Consumers, NGOs, etc.)
- Designing outreach objectives and activities
- Communication and storytelling for engagement

Unit III: Engaging with the community for Skill Development and Empowerment **28 Hours**

This unit covers skill-based workshops, sustainability practices, awareness campaigns, NGO collaborations, and organizing textile events for marketing and outreach.

- Conducting hands-on workshops / training programmes in sewing, tie-dye, block printing, embroidery, digital marketing etc.
- Teaching sustainable textile /apparel practices (Recycling/Upcycling)
- Awareness generation campaigns (online/offline)
- Collaboration with NGOs
- Organising events like – Exhibitions, textiles mela etc. for marketing and selling at college level and in local markets

Unit IV: Impact Assessment and Documentation **8 Hours**

This unit covers feedback collection, impact analysis, and documentation through reports, presentations, and reflections for future improvement.

- Collecting feedback and analyzing outreach impact
- Preparing reports, presentations, and visual documentation
- Reflecting on learnings and areas for improvement

Essential Readings

- Muthu, S. S., (Ed.). (2018). *Textiles and clothing sustainability: Recycled and upcycled textiles and fashion*. Springer.
- Gillow, J., & Barnard, N. (2014). *Indian textiles*. Thames & Hudson.
- Shah, A. (2021). *Crafting a future: Stories of Indian textiles and sustainable practices.* Niyogi Books Pvt. Ltd.
- Blake, B. R., Martin, R. S., & Du, Y. (2011). *Successful community outreach: A step-by-step guide to developing and implementing a community outreach plan.* (A How-To-Do-It Manual for Librarians). Neal-Schuman Publishers.

Suggested Readings

- Wood, D. (2007). *The practical encyclopedia of sewing: Textile arts, techniques, craft, DIY projects, fashion design, fabric knowledge*. Lorenz Books.
- Gunner, J. (2007). *Shibori for textile artists.* Kodansha International.

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

SKILL BASED COURSE

ADVANCED COMPUTER AIDED DESIGN

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Advanced Computer Aided Design	2	0	0	2	As per admission criteria	Nil

Learning Objectives

- To gain proficiency in advanced CAD software for fashion design.
- To explore innovative and creative design possibilities
- To develop and create detailed garment specifications and digital patterns

Learning Outcomes

The students would be able to:

- Design intricate fashion sketches and patterns digitally.
- Translate design concepts into visualizations and technical drawings.
- Implement CAD and AI to execute design ideas

PRACTICAL

(Credits 2; Hours 60)

UNIT I: Drawing fundamentals in vector-based software **14 Hours**

This unit covers basics of digital sketching, figure proportions, garment and accessories illustrations.

- Overview of interface, tools, panels, workspace and shortcuts (CorelDraw/Inkscape/any other open-source application)
- Figure Proportion Exercise
- Fashion Croquis Creation
- Flat sketches of garments and accessories

UNIT II: Digital Fashion Design: Vector Based Software (CorelDraw/Inkscape/ any other open-source application) 18 Hours

This unit focuses on usage of vector based software to create, edit and transform designs.

- Text and object manipulation
- Types of motifs and motif development
- Forms of motif- natural, stylised, abstract and geometric forms
- Motif repeats and colourways
- Theme based design collection
- Tech Pack Creation

UNIT III: Raster Based Software (Photoshop/ Photopea/ GIMP/ any other open source application) 18 Hours

This unit focuses on usage of raster based software to create, edit and transform designs.

- Overview of interface, tools, panels, workspace and shortcuts
- Moodboards and concept boards
- Colour, Pattern and Textures
- Colour modification, filters and blending options
- Layer mask, clipping mask- text and shape
- Garment rendering

UNIT IV: New Ways of Designing Fashion 10 Hours

This unit explores innovative approaches to fashion design, incorporating emerging technologies to depict creative ideas.

- Introduction to generative AI in Fashion Design
- AI for inspiration and trend forecasting
- AI assisted sketches and pattern generation (Deep dream generator, Re-Sleeve, Silk PLM, Outfit Anyone, AI image, etc.)
- Traditional and AI assisted design process: A critique

Essentials Readings:

- Aspelund. K. (2014) Design Process, Fairchild - Bloomsbury Publication, 3rd Edition
- Duggal , (2000) V. A General Guide to Computer Aided Design and Drafting , Mailmax
- Publications, New York
- Grosicki, Z.J. (1989) Advanced Textile Design (4th Ed) - Watson's, London, Newness Butterworths

Suggested Readings:

- Meller S and Eiffer. J (1991) Textile Design, London, Thames and Hudson
- Roojen PV (2002) Art Nouveau Designs, The Pepin Press- Agile Rabbit Editions, Singapore
- Wilson Eva (1994) 8000 Years of Ornament, London, the British Museum Press
- Web tutorials of vector and raster based softwares
- Web tutorials of AI based applications

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

SKILL BASED COURSE

FASHION STYLING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Theory	Tutorial	Practical		
Fashion Styling	2	0	0	2	As per admission criteria	Nil

Learning Objectives

- To grasp the fundamentals of fashion styling and explore its career opportunities.
- To delve into the various categories of styling within the fashion industry.
- To comprehend the business of styling in the fashion industry.
- To train the students with professional ways of understanding wardrobe needs and their development.

Learning Outcomes

The students would be able to:

- Comprehend the responsibilities and roles of a fashion stylist in the industry.
- Apply key styling techniques across personal and commercial disciplines.
- Analyse market trends and implement marketing strategies in the fashion styling business.
- Organize a wardrobe, create a capsule collection, and apply maintenance strategies for long-term functionality.

PRACTICAL

(Credits 2; Hours 60)

UNIT I: Introduction to Fashion Styling **06 Hours**

This unit introduces the basics of styling, the role of stylist and career opportunities.

- Definition of Fashion Styling
- The Role of Fashion Stylist in the Industry
- Career Prospects in Fashion Styling

UNIT II: Fashion Styling Disciplines **20 Hours**

This unit explores various aspects of personal and commercial styling across different platforms and events.

1. Personal Styling

- Body Shape Analysis and Flattering Silhouettes
- Face Shape Analysis
- Personal Color Analysis: Skin Tone, Undertone, and Personal Palette Identification
- Identification of Personal Style Archetypes: Natural, Classic, Romantic, Euro-chic, Bohemian, Avant-garde, Minimalist, Sporty, Dramatic and Eclectic
- Personal Shopping
- Style Consultation for Special Occasions (Weddings and other professional events)

2. Commercial Styling

- Editorial Styling for Digital Platforms and Influencers (Instagram, blogs, online stores, magazines, and catalogues)
- Celebrity Styling and Event Couture (High-Profile Appearances, Airport Looks, Media Events and Red Carpet Dressing)
- Fashion Campaign Styling (Fashion brands and advertisements)
- Styling for Television, Film, and Music Videos
- Styling for Fashion Shows and Events (runway looks and event presentations)

UNIT III: The Business of Styling **14 Hours**

This unit focuses on the business aspects concepts in styling, market analysis and the integration of technology.

- Analysis of Apparel and Accessory Trends
- Market Research and Survey of Apparel and Accessory Brands (Focus on Style, Sizing, and Price)
- Marketing for Styling Professionals
- Technology in Styling- Virtual Fitting Rooms, Styling Apps, Digital Mood Boards, Virtual Shopping Assistance, etc.

UNIT IV: Wardrobe Management and Planning **20 Hours**

This unit covers effective wardrobe planning and long-term management.

- Wardrobe Analysis
- Wardrobe Essentials and 80/20 Principle
- Organization, Categorization and Storage of Wardrobe Items
- Wardrobe Maintenance
- Capsule Wardrobe and Budgeting

Essential Readings

- Griffiths, D. (2017) *The Fashion Stylist's Handbook*, Fashionary, United Kingdom.
- Constantine, S., & Woodall, T. (2017) *The Body Shape Bible: Forget Your Size, Discover Your Shape, Transform Yourself*, Weidenfeld & Nicolson, United Kingdom.
- Funder, D. C. (2001) *The Personality Puzzle* (2nd ed.), W.W. Norton, United States.
- Daly, T. (2015) *Style Forever: The 50+ Guide to Dressing for Your Shape*, Harper Collins, UK.
- Prendergast, S. (2000) *The Fashion Business: Theory, practice, and application*, Berg Publishers, New York.
- Rasband, J. (2006) *Wardrobe strategies for women* (Student edition), Fairchild Books, United States.

Suggested Readings

- Phares, J. E. (1991) *Introduction to personality* (3rd edition), Harper Collins, United States.
- Baumgartner, J. (2012) *You Are What You Wear*, Da Capo Press, United States.
- McCall, A. (1975) *Sewing in Color* (11th edition), Hamlyn Publishing Group, United Kingdom.
- Romano, C. (2001). *Plan Your Wardrobe*, New Holland Publishers, United Kingdom.
- *Vogue* and *Harper's Bazaar* for industry insights and trends.
- Online platforms like Pinterest and Instagram for current styling trends.

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

Annexure-9

UNIVERSITY OF DELHI

Department of Home Science

Faculty of Science

1-Year M.Sc. Fabric & Apparel Science

Coursework + Research Track

Department of Home Science

University of Delhi

Course Credit Structure- NEP

2025

The Department of Home Science offers a 1-year master's programme in Fabric & Apparel Science. The programme equips the students with an understanding of design and technology in Fabric and Apparel along with an appreciation of our rich textile culture. The programme strives to build a cadre of professionals in the area of Fabric and Apparel Science. The courses are pitched at providing a strong theoretical base along with skill enhancement through hands-on training. The course aims to provide knowledge of the latest technological advances in textile and apparel sector as well as sensitize students towards the rich textile heritage, crafts and community. The curriculum provides experiential training to students for professional and career readiness with the right skill set needed in a competitive market scenario.

Programme Specific Objectives:

- To equip students with in-depth theoretical knowledge and analytical skills necessary to excel in the fields of fibre science, textile chemistry, apparel technology, sustainability, and fashion systems.
- To develop students' ability to conduct independent and collaborative research, address industry-related challenges, and contribute new knowledge to textile science and apparel technology.
- To encourage learners to integrate sustainable, ethical, and environmentally conscious approaches across textile production, fashion processes, and consumer practices.
- To cultivate respect for traditional textiles, craftsmanship, and cultural heritage, while equipping students with the skills for documentation, preservation, and conservation.
- To prepare graduates for leadership roles in academia, research organizations, textile and apparel industries, quality testing labs, conservation units, and entrepreneurial ventures.
- To enable students to engage with contemporary industrial practices, technological advancements, and global trends through internships, collaborations, and hands-on training.
- To encourage students to apply their expertise in ways that support the textile sector's growth, promote innovation, empower communities, and strengthen India's position in the global textile and fashion domain.

Programme Specific Outcomes:

The post graduate program in the Department of Fabric and Apparel Science, strives to educate and train students to enable them to:

- Demonstrate awareness of contemporary trends, technological innovations, and emerging developments in textiles and apparel, and apply this understanding to research and professional practice.
- Critically analyse and implement sustainable processes and practices across the textile and fashion value chain, promoting environmental responsibility and ethical decision-making.
- Preserve and conserve traditional and heritage textiles, using scientific methods and culturally informed approaches, blending traditional craftsmanship and modern innovation
- Develop a comprehensive understanding of the fundamentals of design concepts and an ability to think critically and creatively

- Understand the fashion industry ecosystem, including design thinking, product development, branding, and retail operations.
- Apply creative, managerial, and technical competencies to pursue diverse careers in academia, industry, research, and entrepreneurship within the textile, fashion, and allied sectors.
- Engage in research, innovation, and development activities that contribute to national growth, industry advancement, and societal well-being.

1 Yr- M.Sc. Fabric and Apparel Science

COURSEWORK AND RESEARCH

Course Credit Scheme

Program Structure 2: M.Sc. Coursework + Research

Semester	Core Courses		Elective Courses		Research/Project		Total Credits
	No. of Courses	Total Credits	No. of Courses	Total Credits	No. of Courses	Total Credits	
I	2	8	2	8	1	6	22
II	2	8	2	8	1	6	22
Total Credits for the Course	16		16		12		44

List of PGCF courses of M.Sc. Fabric and Apparel Science

(Coursework + Research)

(Semester I and II of the One-year programme)

List of Courses to be offered to students opting for Structure-2 (Coursework + Research) of M.Sc. in 1st and 2nd Semester of One- year Course							
Type of Course	Course No.	Semester	Course Title	Credits for each Course			
				Theory	Tutorial	Practical	Total
SEMESTER I							
Discipline Specific Core Course	DSC 1	I	Advanced Textile Science	3	1	0	4
Discipline Specific Core Course	DSC 2	I	Advanced Garment Design and Construction	2	0	2	4
Discipline Specific Elective Course	DSE 1	I	**From the pool of DSEs given below:** i. Textile Design Development ii. Global Couture iii. Fashion Marketing iv. Statistics and Data Management	As per the specific course			4
Discipline Specific Elective Course	DSE 2	I		As per the specific course			4
General Elective Course (*Can be opted for in place 1 DSE course)	GE 1	I	From the pool of GEs	As per the specific course			4
Dissertation Project/ Entrepreneurship	DP 1	I	Dissertation/Academic project/ Entrepreneurship	0	0	6	6
SEMESTER II							
Discipline Specific Core Course	DSC 3	II	Indian Handcrafted Textiles	3	0	1	4
Discipline Specific Core Course	DSC 4	II	Advanced Dyeing and Printing	2	0	2	4
Discipline Specific Elective Course	DSE 3	II	**From the pool of DSEs given below:** i. Commercial Fabrics	As per the specific course			4

Discipline Specific Elective Course	DSE 4	II	ii. Women's Wear: Concept to Creation iii. Technical Textiles iv. Psychology of Fashion v. History of Fshion	As per the specific course	4

Pool of Discipline Specific Elective Courses offered in Semester I				
	Credits for each Course			
	Theory	Tutorial	Practical	Total
i. Textile Design Development	1	0	3	4
ii. Global Couture	3	1	0	4
iii. Fashion Marketing	3	0	1	4
iv. Statistics and Data Management	3	0	1	4
Pool of Discipline Specific Elective Courses offered in Semester II				
	Credits for each Course			
	Theory	Tutorial	Practical	Total
v. Commercial Fabrics	3	1	0	4
vi. Women's Wear: Concept to Creation	2	0	2	4
vii. Technical Textiles	3	1	0	4
viii. Psychology of Fashion	3	1	0	4
ix. History of Fashion	3	1	0	4
Pool of General Elective Courses offered by the Department of Home Science				
	Credits for each Course			
	Theory	Tutorial	Practical	Total
i. Parenting in Contemporary India	3	1	0	4
ii. Resources and Sustainability	3	1	0	4
iii. Organisational Communication: Tools and Techniques	3	1	0	4
iv. Lifestyle Modifications for Optimal Health	3	1	0	4
v. Community Nutrition Assessment	3	1	0	4
vi. Dyeing and Printing with Natural Dyes	3	0	1	4
vii. Appreciation of Indian Textiles	3	1	0	4

Discipline Specific Core Courses

DISCIPLINE SPECIFIC CORE COURSE
ADVANCED TEXTILE SCIENCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Advanced Textile Science	4	3	1	0	As per admission criteria	Nil

Learning Objectives

- To provide students with the knowledge of the structure, production and properties of natural and synthetic fibres.
- To familiarize them with the various yarn and fabric production techniques.
- To learn about the various standards, quality marks and labels in textiles and to understand the process of assurance of quality in textiles.

Learning Outcomes

Students will be able to:

- Understand the structure and production techniques of various natural and manmade fibers and their physical properties.
- Identify and explain the various conventional and non-conventional techniques of yarn spinning.
- Demonstrate an understanding of various types of fabric forming methods.
- Gain knowledge about quality parameters for fibre, yarn and fabrics.
- Develop understanding of standards and regulations and quality control organization.
- Acquire skills to inspect, manage and control quality in the textile industry.

THEORY
(Credits 3; Hours 45)

UNIT I: Fibre: Chemistry, Morphology, Production and Properties **18 Hours**

In this unit, the students will learn about the chemical composition, morphology, chemical and physical properties of selected textile fibres.

- Natural fibers- Cotton, Flax, Silk, Wool
- Man-made fibers- Rayon, Acetate, Nylons, Polyester, Acrylic, Modacrylic, Olefins, Aramids, Elastomeric, Carbon fiber, Glass fiber.
- Physical properties of textile fibre and their relationship to the polymer structure: Tensile, Moisture, Thermal, Optical and Electrical Properties

UNIT II: Yarn: Production and Properties **8 Hours**

This unit will discuss various yarn production techniques and yarn characteristics.

- Conventional and non-conventional spinning methods
- Yarn properties and their implications on quality: Fineness, Evenness, Yarn count, Yarn crimp, Yarn twist
- Yarn Texturisation- Purpose and Methods of Texturisation

UNIT III: Fabric Construction **12 Hours**

This unit will elaborate on the significant fabric construction techniques.

- Weaving
    - Weaving operations
        - Yarn preparation for weaving
        - Shedding- Tappet, Dobby, Jacquard shedding mechanisms
        - Picking mechanisms
        - Beat-up mechanisms
        - Secondary and auxiliary loom motions
    - Types of Looms – Shuttle and Shuttle less
    - Design interpretation and representation- draft and peg plan
- Knitting
    - Basics of Knitting- Terminology, Types of stitches
    - Knitting machines
    - Types of Knitted fabric and their properties: Warp and Weft knits
    - Knitwear production techniques
- Non-woven
    - Production of non-woven
    - Types of non-woven fabrics and their properties
- Fabric defects- Woven and Knitted

UNIT IV: Quality Control in Textiles: Concept, Organizations, Certifications and Managing Quality **7 Hours**

In this unit, the students will be apprised about the concept of quality and the related certification marks, labels and tools for managing quality

- Concept and scope of quality in fabrics and apparel
- Certification, Quality marks and Labels- Eco-mark, Silk mark, Wool mark, Handloom mark, Care labels, Fibre ID label, Environment labels
- Fabric Inspection procedure
- Tools for managing quality

TUTORIAL

(Credits 1; Hours 15)

1. Comparison between Woven, Knitted and Non-Woven Fabrics

Discussion: Differentiation between various types of fabric in terms of properties and prices

Activity: Visits to stores/ markets to procure samples for recognition and differentiation

2. Spinning, weaving and knitting

Discussion: Processes and machinery being used for these units

Activity: Plan visits to the units to understand the processes and machinery being used. Students will make a detailed report of the units visited.

3. Woven Design interpretation and representation

Discussion: Making of Draft plans and peg plan to be explained

Activity: Students to prepare weave plan, draft and lifting plan for various woven fabric samples

4. Quality marks and labels

Discussion: Various types of quality marks and labels to be discussed in apparels

Activity: Students to carry out a market survey of various apparel categories for analysing quality marks, labels and submit a report of the same

5. Fabric inspection methods and quality management in Garment industry

Activity: Garment industry visits to survey the methods of inspection and quality management employed

Essential Readings

UNIT I

This unit introduces students to natural and man-made fibres, explaining their sources, structure, production techniques and basic characteristics. It will also help the students understand various pphysical properties of textile fibres such as tensile, moisture, thermal, optical and electrical and their relationship to the polymer structure.

- Rastogi, D. and Chopra, S. (Ed) (2017) *Textile Science*, India: Orient Black Swan Publishing Limited. Chapters 1-3.
- Saville, B.P. (2000) Physical Testing of Textiles, Textiles Institute
- Gohl, E. P. G. and Vilensky, L. D. (1983) *Textile science*. Melbourne: Longman Cheshire. Chapters 1-5.
- Sekhri S. (2016) *Textbook of Fabric Science: Fundamentals to Finishing*, 2E, Delhi: PHI Learning Private Ltd. Chapters 1-8.

UNIT II

This unit will introduce various conventional and non-conventional methods of yarn production. Students will also learn about the yarn properties and their implications on quality. The unit will also cover various methods of yarn texturisation.

- Rastogi, D. and Chopra, S. (Ed) (2017) *Textile Science*, India: Orient Black Swan Publishing Limited. Chapter 4.
- Sekhri S. (2016) *Textbook of Fabric Science: Fundamentals to Finishing*, 2E, Delhi: PHI Learning Private Ltd. Chapters 9-10.

UNIT III

This unit covers in detail various fabric production techniques such as weaving, knitting and non-woven methods. The students will learn about the shedding, picking and beating up mechanisms along with the primary and secondary motions of the loom. Various shuttle and shuttle less looms and preparation of draft and peg plans will also be introduced. Additionally, the unit will cover the basics of knitting and non-wovens, the types of machines used and the properties of knitted and non-woven fabrics. Students will also learn about the woven and knitted fabric defects.

- Rastogi, D. and Chopra, S. (Ed) (2017) *Textile Science*, India: Orient Black Swan Publishing Limited. Chapters 6-8.
- Schwartz, P. (1979) *Fabric Forming Systems*, School of Textiles, North Carolina State University.
- Sekhri S. (2016) *Textbook of Fabric Science: Fundamentals to Finishing*, 2E, Delhi: PHI Learning Private Ltd. Chapters 11-13.
- Spencer, D.J. (2005) *Knitting Technology: A Comprehensive Handbook and Practical Guide*, 4th ed. Cambridge: Woodhead Publishing.

UNIT IV

In this unit the students will be introduced to the concept and scope of quality in fabrics and apparel. Additionally, the unit will cover various textile related certification, quality marks and labels. The unit will also cover in detail the fabric Inspection procedure and the tools for managing quality in the garment and apparel industry.

- Saville, B.P. (2000) Physical Testing of Textiles, Textiles Institute
- Bhardwaj, S.K. and Mehta, P.V. (1998) Managing Quality in the Apparel Industry, New Delhi, New Age International
- Kadolph, S.J. (1998) *Quality Assurance of Textiles and Apparel*, Fairchild publication

Suggested Readings

- Bhardwaj, S.K. and Mehta, P.V. (1998) Managing Quality in the Apparel Industry, New Delhi, New Age International
- Booth, J. E. (1982) Principle of Textile Testing, Meanness Butter worth scientific, London
- Brackenbury, T. (2005). *Knitting Clothing Technology*, Blackwell Science Publishers

- Eric, O. (1975). *Spun Yarn Technology*, Butterworth Publication.
- Hearle, J.W.S. and Peters, P.H. (1975) *The Physical Testing of Textile Fibres*, The Textile Institute Heinmann
- Kadolph, S.J. (1998) *Quality Assurance of Textiles and Apparel*, Fairchild publication
- Kothari, V.K., Behera, B.K. (1996) *Quality Control in Textiles and Apparel Industry* A&B, Delhi, Department of Textile Technology

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

DISCIPLINE SPECIFIC CORE COURSE
ADVANCED GARMENT DESIGN AND CONSTRUCTION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Advanced Garment Design and Construction	4	2	0	2	As per admission criteria	Introductory Course in Garment Design and Construction

Learning Objectives

- To understand terminology, tools, dress forms, and fabric selection for draping.
- To apply draping principles and processes to develop accurate balanced patterns.
- To develop advanced patterns for bodice, skirt, and sleeve variations and apply fundamentals of grading.
- To identify and handle specialty fabrics with appropriate seams and finishes.

Learning Outcomes

The students would be able to:

- Demonstrate proficiency in using dress forms and draping tools.
- Drape and develop balanced draped basic patterns and their variations.
- Construct style variations for bodice, skirt, and sleeve designs and apply basic grading techniques.
- Handle specialty fabrics effectively and apply appropriate seam and finishing techniques.

THEORY

(Credits 2; Hours 30)

UNIT I: The Dress Form, Tools and Draping Terminology **4 Hours**

This unit introduces draping terminology, tools, materials and different dress forms. The unit also emphasizes impact of fabric characteristics and grain direction on the fall and balance of a garment.

- Draping terminology, tools, and essential supplies
- The dress form and specialty forms: types and uses
- Fabric selection considerations: hand, appearance, texture, weight

- Understanding grainlines (lengthwise, cross-grain, bias)

UNIT II: Draping Principles and Process **5 Hours**

This unit focuses on the principles and skills of draping; step by step draping process for achieving balanced and accurate patterns. The unit also highlights identification of design details, fabric planning, and innovative zero-waste draping strategies.

- Fundamentals of draping: principles and skills
- Identification of design details; fabric calculation and preparation
- Draping process, marking, trueing, blending seam lines, adding seam allowances
- Principles of balanced patterns
- Zero-waste draping approaches

UNIT III: Advanced Pattern Development and Grading **12 Hours**

This unit focuses on advanced pattern development for creating complex bodice, skirt, and sleeve variations. It also introduces the fundamentals of grading.

- Bodice- Surplice (wrap), off-shoulder, halter, cowls and strapless princess foundation
- Skirts- Pegged skirt with pleats and skirt with godets
- Sleeves- Sleeves with extended cap, wedding sleeve, kimono, raglan and drop shoulder
- Grading- terminology, methods and types of grading

UNIT IV: Handling Specialty Fabrics and Seam Variations **9 Hours**

This unit introduces handling specialty fabrics, addressing challenges in cutting, stitching, finishing, and selecting suitable seam variations for effective construction.

- Specialty Fabrics
    - Furs and feathers
    - Stretch fabrics and knits
    - Sheer and open weave
    - Laces and nets
    - Napped and pile
    - Occasional wear fabrics
- Seam variations and their applications

PRACTICAL

(Credits 2; 60 hours)

1. Draping the basic bodice and developing bodice style variations

2. Draping the basic skirt block and creating skirt style variations (with pleats, flare, yokes, panels, circularity, wraps, asymmetry)

3. Manual grading of a basic bodice and skirt pattern

4. Preparation of a specialty-fabric swatch book (handling precautions, appropriate needle and thread, seam type and finishing methods)

5. Construction of seam variation samples

Essential Readings

UNIT I

This unit introduces the fundamentals of draping, focusing on basic draping terminology, tools, and essential supplies used in garment construction. Students learn about different types of dress forms, including standard and specialty forms, and their appropriate uses. The unit highlights the importance of fabric selection by examining characteristics such as hand, appearance, texture, and weight, and how these affect the fall and balance of garments. It also provides an understanding of grainlines—lengthwise, cross-grain, and bias—and their role in garment fit, structure, and overall drape.

- Amaden-Crawford, C. (2018). *The art of fashion draping* (5th ed., chaps. 1–2). Fairchild Books.
- Jaffe, H., & Relis, N. (2011). *Draping for fashion design* (5th ed., chaps. 1–2). Pearson Education.
- Joseph-Armstrong, H., & Ashdown, S. P. (2022). *Draping for apparel design* (4th ed., chaps. 1–3). Bloomsbury Publishing.
- Kiisel, K. (2020). *Draping: The complete course* (2nd ed., unit 1). Laurence King Publishing.
- Paul, D., & Verreos, N. (2024). *The fundamentals of fashion draping*. Nikolaki, Inc. ISBN 9780999454343.

UNIT II

This unit develops an understanding of the core principles and skills required for effective draping. It guides students through the step-by-step draping process to achieve accurate, well-balanced patterns. Emphasis is placed on identifying design details, planning fabric requirements, and preparing materials before draping. Students learn essential processes such as marking, trueing, blending seam lines, and adding seam allowances to convert draped muslin into usable patterns. The unit also introduces principles of balanced pattern development and explores innovative zero-waste draping approaches, encouraging efficient fabric use and sustainable design thinking.

- Amaden-Crawford, C. (2018). *The art of fashion draping* (5th ed., chaps. 1–5). Fairchild Books.

- Helmersson, B. (2023). *Zero waste patterns*. Quadrille Publishing.
- Joseph-Armstrong, H., & Ashdown, S. P. (2022). *Draping for apparel design* (4th ed., chaps. 4–9). Bloomsbury Publishing.
- Kiisel, K. (2020). *Draping: The complete course* (2nd ed., units 1–3). Laurence King Publishing.
- Rissanen, T., & McQuillan, H. (2023). *Zero waste fashion design* (2nd ed., chaps. 2–5: Zero-waste design methods and fabric planning). Bloomsbury Visual Arts.

UNIT III

This unit focuses on advanced pattern development techniques for creating complex garment styles. Students learn to develop and modify bodice patterns such as surplice (wrap), off-shoulder, halter, cowl, and strapless princess foundations with emphasis on fit and structure. The unit also covers skirt variations including pegged skirts with pleats and skirts with godets, highlighting volume and movement. Advanced sleeve designs such as extended cap, wedding, kimono, raglan, and drop-shoulder sleeves are explored. Additionally, the unit introduces grading fundamentals, including basic terminology, methods, and types used for size adaptation and production.

- Handford, J. (2015). *Pattern grading for women's, men's, and children's apparel*. Wiley.
- Joseph-Armstrong, H. (2021). *Patternmaking for fashion design* (5th ed., chaps. 4–6, 13–15, 19). Pearson Education.
- Mullet, K. K. (2018). *Concepts of pattern grading*. Fairchild Books.
- Parish, P. (2020). *Pattern cutting: The architecture of fashion*. Bloomsbury Publishing.

UNIT IV

This unit introduces techniques for handling specialty fabrics, including furs, feathers, stretch fabrics, knits, sheer and open weaves, laces, nets, napped and pile fabrics, and occasional wear textiles. It addresses challenges in cutting, stitching, and finishing these materials. Emphasis is placed on understanding fabric behaviour and selecting suitable seam variations to ensure proper construction, durability, flexibility, and aesthetic appeal in garments made from specialty fabrics.

- Amaden-Crawford, C. (2023). *A guide to fashion sewing* (7th ed.). Bloomsbury Publishing.
- Amaden-Crawford, C. (2024). *Fashion sewing: Advanced techniques*. Fairchild Books.
- Baugh, G. (2019). *The fashion designer's textile directory: A guide to fabrics' properties, characteristics, and garment-design potential*. Bloomsbury Publishing.
- Czachor, S. (2019). *Sewing with knits and stretch fabrics*. Fairchild Books.
- Shaeffer, C. (2014). *Sewing for the apparel industry*. Pearson Education.
- Shaeffer, C. (2008). *Fabric Sewing Guide*. Krause Publications. Cincinnati

Suggested Readings

- Almond, K. (2017). *Basics Fashion Design: Draping*. Bloomsbury Publishing.

- Amaden-Crawford, C. (2015). *Guide to Fashion Sewing* (6th ed.). Fairchild Books.
- Brown, P., & Rice, J. (2014). *Ready to wear apparel analysis* (4th ed.). Pearson Education. New Delhi
- Glock, R. E., & Kunz, G. I. (2014). *Apparel Manufacturing: Sewn Product Analysis* (5th ed.). Pearson.
- Keiser, S. J., & Garner, M. B. (2012). *Beyond Design: The Synergy of Apparel Product Development.* Fairchild Books.
- Mehta, R. (2015). *Practical Pattern Making*. CBS Publishers.
- Smith, K. (2012). *Sewing Techniques and Finishes*. Barron's.
- Udale, J. (2014). *Creative Draping*. Laurence King Publishing.

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

DISCIPLINE SPECIFIC CORE COURSE
INDIAN HANDCRAFTED TEXTILES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Indian Handcrafted Textiles	**4**	**3**	**0**	**1**	**As per admission criteria**	

Learning Objectives

- To create awareness and foster appreciation of the country's rich handcrafted textiles.
- To acquaint students about the handloom sarees, shawls, carpets and floor coverings of various regions.
- To impart knowledge about the various embroidered and painted textiles.

Learning Outcomes

Students will be able to:

- Recognise and identify embroidered fabrics of different states in terms of stitches, colours, motifs and their significance.
- Explain material and design of selected handloom fabrics.
- Describe the historical perspective, production and techniques of various shawls, carpets and floor coverings.
- Discuss the significance of certification and GI tag for traditional textile crafts.

THEORY
(Credits 3; Hours 45)

UNIT I: Handloom Sarees **12 Hours**

This unit will highlight the importance of certification and GI tag for traditional textiles. The unit will focus upon handloom sarees from diverse regions with respect to history, production centre, techniques, designs and colours.

- Kota doria (Rajasthan), Paithani (Maharashtra), Chanderi and Maheshwari (Madhya Pradesh), Gadwal (Telangana), Kasavu (Kerala), Bomkai (Odisha), Pochampally (Andhra Pradesh)

UNIT II: Shawls **7 Hours**

This unit will provide an overview of diverse materials, techniques, and design features of shawls produced across different regions.

- Kinnauri and Kullu (Himachal Pradesh), Kanikar and Amlikar (Kashmir), Northeast Shawls.

UNIT III: Carpets and Floor Coverings **8 Hours**

This unit highlights the variety of carpets and the distinctive production techniques, designs, and colours associated with each of the following floor coverings.

- Hand-Knotted carpets
- Bhutia carpets
- Namda and Gabba, Kashmir
- Durries : Panja durri of Punjab and Haryana, Chindi durri

UNIT IV: Embroidered and Painted Textiles **18 Hours**

This unit explores the materials, techniques, motifs, and colour traditions found in India's embroidered and painted textiles.

- Embroideries: Chamba Rumal (Himachal Pradesh), Zardozi (Uttar Pradesh), Suf (Gujarat), Toda (Tamil Nadu), Manipur, Banjara (Telangana), Applique work: Pipli (Odisha) and Gotta Patti (Rajasthan).
- Painted textiles: Pichwai painting of Nathdwara and Phad painting (Rajasthan), Thankga painting (Ladakh), Mata ni Pachedi of Gujarat.

PRACTICAL

(Credit 1; Hours 30)

1. Create samples of traditional embroideries.
2. Develop a design catalogue on traditional textile crafts.
3. Create a sample of tapestry weave used in shawl making
4. Prepare an interview schedule for the study of chosen textile craft and craftsmen and administer the prepared interview schedule on selected artisan samples
5. Documentation of a selected textile craft
6. Create products inspired from traditional textiles.

Essential Readings

UNIT I

This unit explores handloom sarees from across India, highlighting their history, production, techniques, and designs. From Kota Doria to Paithani, Chanderi, and more, each saree showcases unique traditions and craftsmanship. It will also uncover the importance of certification and GI tags in promoting and protecting these textiles, celebrating the artisans who weave culture, history, and beauty.

- Barnard, N., Gillow, J., 1993, Indian Textiles, Thames and Hudson, USA
- Chattopadhaya, K.D., 1995, Handicrafts of India, Wiley Eastern Limited, N Delhi
- Crill, R., 2015, The Fabric of India, Victorial and Albert Museum, UK
- Chishti R. K., Kelkar R. & Singh M. (2010). Saris of India : tradition and beyond. New Delhi: Lustre Press, Roli Books.
- Singh M. & Chishti R. K.,(1995). Saris of India : Bihar and West Bengal. New Delhi: Amr Vastr Kosh & Wiley Eastern Ltd Pune
- Das, Shukla, 1992, Fabric Art- Heritage of India, Abhinav Publications, N Delhi.
- GI Tags and certification- https://handicrafts.nic.in/CmsUpload/12222017102212GI%20BOOK%20FINAL%202-5-17_resized.pdf
- GI tagged Indian textiles-https://www.usthadian.com/gi-tagged-indian-textiles-driving-heritage-and-artisan-growth/

UNIT II

Indian shawls showcase rich cultural diversity and artisanal expertise. This unit explores shawls from across India - Himachal Pradesh (Kinnauri, Kullu), Kashmir (Kanikar, Amlikar), and Northeast India, highlighting unique materials, techniques, and designs that reflect tradition and regional identity.

- Irwin, J, 1954, Shawls - A study in Indo European Influences, London
- Jaitley,J, ed 1990, Crafts of Jammu, Kashmir and Ladakh, Mapin Publishing, Ahmedabad
- Rizvi, J., & Ahmed, M. (2017). Pashmina: The Kashmir shawl and beyond (Second revised edition). Marg Foundation.
- Roy, S. K. (2007). Textile traditions of Northeast India. Agam Kala Prakashan.
- Jaitly, J. (2012). Crafts atlas of India (2012 ed., 464 pp.). Niyogi Books. (ISBN: 978-8189738372)
- Sharma, N et al 2008, Traditional handicrafts and handlooms of Kullu district, HP., Indian Journal of Traditional Knowledge, Vol 7 (1), Jan pp56-61
- Ames, Frank 1986, The Kashmir Shawl, Antique Collections, Woodbridge
- Kullu shawls - https://www.researchgate.net/profile/Anju-Kapoor-3/publication/363921343_Traditional_Handicrafts_and_Handloom_of_Kullu_district_Hi

machal_Pradesh/links/6447e4c7d749e4340e383238/Traditional-Handicrafts-and-Handloom-of-Kullu-district-Himachal-Pradesh.pdf?origin=scientificContributions

- Kanikar Shawls - https://www.researchgate.net/profile/Veenus-Jain/publication/332801594_Kani_Shawl_A_Case_Study_of_a_Milestone_in_the_Art_of_Weaving/links/5ccbc2bb92851c3c2f818f79/Kani-Shawl-A-Case-Study-of-a-Milestone-in-the-Art-of-Weaving.pdf?origin=publication_detail&_tp=eyJjb250ZXh0Ijp7ImZpcnN0UGFnZSI6InB1YmxpY2F0aW9uIiwicGFnZSI6InB1YmxpY2F0aW9uRG93bmxvYWQiLCJwcmV2aW91c1BhZ2UiOiJwdWJsaWNhdGlvbiJ9fQ

UNIT III

Indian carpets and floor coverings are renowned for their beauty and diversity, reflecting the country's rich textile heritage. This unit explores the distinctive world of hand-knotted carpets, Bhutia carpets, Namda and Gabba from Kashmir, and Durries like Panja durri from Punjab and Haryana, and Chindi durri, highlighting their unique production techniques, designs, and colours that showcase regional craftsmanship and tradition.

- Mathur, A. (2004). Indian carpets: A hand-knotted heritage (Hardcover ed., 96 pp.). Rupa Publication Pvt. Ltd. (ISBN: 8129103095)
- Pande, P. (2024). Floor coverings from Kashmir: Kaleen carpets, namdah, gabba, ari rugs and wagoo mats (1st ed., 236 pp.). Niyogi Books.
- Chattopadhyay K. D. 2018, Indian Carpets and Floor Coverings, All India Handicrafts Board Digitised version https://archive.org/details/indiancarpetsflo00chat
- Namda - https://gaatha.org/Craft-of-India/namda-craft-detail-research/
- Namda Art of Kashmir- https://oaklores.com/2024/12/06/namda-art-of-kashmir-reviving-the-heritage-of-handcrafted-rugs/
- Gabba making - https://poonchwoolenandhandicraftservices.wordpress.com/best-woolen-services-in-poonch/gabba-making-in-valley-of-poonch/
- Panja Durries - https://www.ijcmas.com/8-2-2019/Saroj%20Yadav%20and%20Neelam%20M.%20Rose.pdf
- Patterns and symbols of Panda Durries https://oaklores.com/2024/12/16/traditional-patterns-and-symbols-in-punjabi-durries/

UNIT IV

India's embroidered and painted textiles showcase rich artistic heritage. This unit explores embroideries (Chamba Rumal, Zardozi, Suf, etc.), appliqué work (Pipli, Gotta Patti), and painted textiles (Pichwai, Phad, Thankga, Mata ni Pachedi), highlighting unique techniques, motifs, and colours that make each textile a masterpiece.

- Jhulka, Anu 2019, Nathdwara Pichwais: The paintings of Lord Krishna, Blue Rose Publisher

- Mohanty, B.N, 1980, Applique craft of Orissa, Alfred Buhler ed, Calico museum of textiles (Digitised 2009)
- Thankha Paintings - The Process of Thangka Painting https://artsandculture.google.com/story/the-process-of-thangka-painting-dastkari-haat-samiti/-QWh8YagYf4tIQ
- Karolia, Anjali, 2019, Traditional Indian Handcrafted Textiles, Niyogi Publishers
- How Mata ni Pachedi is Created https://artsandculture.google.com/story/how-mata-ni-pachedi-is-created-dastkari-haat-samiti/4wWx_aQVxaGXJQ
- Phad Paintings - https://www.artisera.com/blogs/expressions/phad-paintings-of-rajasthan
- Naik, Shailja 1996, Traditional Embroideries of India, APH Publishing

Suggested Readings

- Annual Report, (2002-2003), Handloom Industry, Ministry of textiles, Chapter 5, pg 1-20
- Chelna Desai, 1988, Ikats Textiles of india, Chronicle Books, India
- Ghosh, G.K 2000, Ikat Textiles of India New Apron, New Delhi
- Handa, O.C. (1998). Textiles, Costumes and Ornaments of the Western Himalayan. Indus Publishing.
- Jayakar, Pupul 1979, Homage to Kalamkari, Marg Publishing, Bombay
- Mausumi Kar, (2015), The Indian Textile and Clothing Industry An Economic Analysis, Springer New Delhi Heidelberg New York Dordrecht London, Chapter 1& 2, pg 12-33.
- Pandit Savitri, 1951, Indian Embroidery- Its Variegated Charm, Pandit Publisher, Baroda Embroidery tutorials, video links of woven textiles and slide share
- Carpet weaving Traditions - https://www.granthaalayahpublication.org/journals/granthaalayah/article/download/IJRG19_ARTS11_08/794/4631
- Craft Documentaries on YouTube

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

DISCIPLINE SPECIFIC CORE COURSE
ADVANCED DYEING AND PRINTING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Advanced Dyeing and Printing	4	2	0	2	As per admission criteria	Introductory Course in Dyeing and Printing

Learning Objectives

- To gain knowledge about the new developments in dyeing and printing
- To understand the environmental issues related with dyeing and printing
- To understand the concept of colour and its measurement

Learning Outcomes

The students would be able to:

- Identify and describe different dyeing machines.
- Describe the innovative methods of printing
- Explain certifications and standards related to dyeing and printing of textiles.
- Objectively measure and analyse the colour of dyed and printed textiles

THEORY
(Credits 2; Hours 30)

UNIT I: Dyeing **12 Hours**

This unit lays thrust on the dyeing machines used at different stages of dyeing and latest developments in dyes and dyeing technology.

- Dyeing machines
- Mass colouration
- Dyeing of blends
- New developments in dyes: Thermochromic dyes, Photochromic dyes, Bio dyes, etc.

UNIT II: Printing **08 Hours**

This unit highlights various new methods and styles of printing.

- New developments in printing- Digital printing, Ink-jet printing, Flock printing, Foil printing, 3-D printing, etc.
- Printing with Natural dyes: Traditional styles and new developments

UNIT III: Ecological Concerns in Dyeing and Printing **05 Hours**

This unit highlights the impact of dyeing and printing on the environment and various eco-friendly products and processes.

- Environmental impacts of dyeing and printing
- Eco-friendly processes and products: Low water and low energy intensive dyeing methods (Ultrasonic dyeing, Foam dyeing, Supercritical CO_2 dyeing, etc.)
- Certifications and standards in dyeing and printing

UNIT IV: Colour Measurement **05 Hours**

This unit deals with the dimensions of colours and its measurement.

- Colour theory: hue, value, intensity
- Principles of colour measurement: Optical density, K/S, CIE-L*c*h*, CIE-L*a*b*
- Metamerism

PRACTICAL
(Credits 2; Hours 60)

- Dyeing of different substrates with natural dyes
- Printing with natural dyes
- Dyeing and printing of blends
- Printing on silk and wool
- Discharge on reactive grounds
- Discharge printing on silk with acid ground
- Transfer Printing
- Colour measurement

Essential Readings

UNIT I

This unit explains the requirements of dyeing machine. It includes different types of machines used for dyeing at various stages of dyeing. It also deals with the concept of mass colouration and is importance. Dyeing of important blends will also be dealt with. In addition, new developments in dyeing will be explained.

- Aspland, J. R. (1997). *Textile dyeing and colouration*. AATCC.
- Chakraborty, J. N. (2014). *Fundamentals and practices in colouration of textiles* (2nd ed.). Woodhead Publishing India Pvt. Ltd.
- Rastogi, D., & Chopra, S. (Eds.). (2017). *Textile science*. Orient Black Swan Publishing Limited.
- Sekhri, S. (2022). *Textbook of fabric science: Fundamentals to finishing* (4th ed.). PHI Learning Pvt. Ltd.
- Trotman, E. R. (1984). *Dyeing and chemical technology of fibres* (6th ed.). Charles Griffin and Company Ltd.
- सेख़% सीमा (2022), aw ि◌ay7v, PHI Learning Pvt. Ltd. Delhi

UNIT II

This unit includes developments and advancements in textile printing such as digital printing, ink jet printing, 3D printing etc. This unit further discusses printing with natural dyes.

- Clarke, W. (1977). *An introduction to textile printing*. Butterworth and Co. Ltd.
- Kolanjikombil, M. (2023). *Printing of textile substrates: Machineries and methods* (Vol. 1). Woodhead Publishing.
- Mahapatra, N. N. (2022). *Textile printing*. Woodhead Publishing India.
- Miles, L. W. C. (1994). *Textile printing* (2nd ed.). Society of Dyers and Colorists.
- Shenai, V. A. (1979). *Technology of textile processing: Technology of printing* (2nd ed.). Sevak Publications.
- Shore, J. (Ed.). (1990). *Colorants and auxiliaries: Organic chemistry and application properties* (Vols. 1–2). Society of Dyers and Colorists.

UNIT III

In this unit students will be familiarised with the impact of various chemicals and methods used for dyeing and printing on the environment. Developments towards eco-friendly dyeing and printing will be dealt with.

- Bhatia, S. C., Mangla, P., & Devraj, S. **(2020).** *Energy conservation in textile industry*. Woodhead Publishing India.
- Mahapatra, N. N. **(2015).** *Textiles and environment*. Woodhead Publishing India Pvt. Ltd.

UNIT IV

Fundamental concepts of colour and its measurement will be explained. The students will learn the use of colour measurement in the Textile industry.

- Gulrajani, M. L. (Ed.). (2010). *Colour measurement: Principles, advances and industrial applications*. Woodhead Publishing.

- Shah, H. S., & Gandhi, R. S. (1990). *Instrumental colour measurement and computer aided colour matching for textiles*. Mahajan Book Publication.

Suggested Readings

- Gulrajani, M. L. (2012). Colour specification and visual approval methods for textiles. In M. L. Gulrajani (Ed.), *Colour design: Theories and applications* (pp. 271–294). Woodhead Publishing.
- Kuehni, R. G. (1975). *Computer colorant formulation*. Lexington Books.
- Park, J. (1993). *Instrumental colour formulation: A practical guide*. Woodhead Publishing.
- Shah, H. S., & Gandhi, R. S. (1990). *Instrumental colour measurement and computer aided colour matching for textiles*. Mahajan Book Publication.
- Textile Institute / Elsevier. (2014). *Principles of colour and appearance measurement*. Woodhead Publishing Series in Textiles.
- Sule, A. D. (2002). *Computer colour analysis*. New Age International Publishers.

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

Discipline Specific Elective Courses

DISCIPLINE SPECIFIC ELECTIVE COURSE
TEXTILE DESIGN DEVELOPMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Textile Design Development	4	1	0	3	As per admission criteria	Nil

Learning Objectives

- To develop an understanding of design elements, principles, forecasting, trend analysis, and design thinking for textile design development.
- To enhance observational and rendering skills through nature drawing, object drawing and motif development.
- To enable students to translate concepts into practical outputs such as motifs, pattern repeats, colour ways and digital textile layouts.
- To build competency in both vector and raster software for digital drawing, motif refinement, seamless repeat creation and product mock-up development.
- To encourage problem-solving, creativity and user-centered thinking by integrating design thinking with hands-on textile product development.

Learning Outcomes

The students would be able to:

- Apply elements and principles of design, forecasting concepts, trend types and design thinking stages in their practical work.
- Create detailed nature and object drawing, rendering and motif variations based on observation and analysis.
- Digitally refine motifs using vector and raster software and convert them into seamless pattern repeats and multiple colour ways.
- Interpret trend and forecast data for colour selection, motif direction and product styling.
- Apply digitally developed patterns to create various textile products.

THEORY

(Credit 1; Hours 15)

UNIT I: Elements and Principles of Design 6 Hours

This unit introduces the elements and principles guiding textile composition. It covers also covers techniques of visual layout and its composition.

- Elements of Design: Line, Colour, Texture, Shape, Form and Space
- Principles of Design: Balance, Rhythm, Proportion, Emphasis, Harmony and Unity
- Visual composition and design thinking basics

UNIT II: Design Context and Application 9 Hours

This unit provides an overview of forecasting and textile trends and discusses major art movements. The unit also details the design thinking process and the development of mood boards and theme boards to visually communicate trend directions and design concepts.

- Trends and Forecasting: Micro, Macro, Fad, Classic, Seasonal
- Major art movements and their textile applications: Renaissance, Baroque, Neoclassicism, Romanticism, Realism, Art Nouveau, Art Deco, Cubism, Futurism, Abstract Expressionism and Pop Art
- Design Thinking Process: Empathize, Define, Ideate, Prototype and Test
- Development of mood boards and theme boards

PRACTICAL

(Credits 3; 90 hours)

1. Nature drawing, object drawing and rendering
2. Development of motif- woven and surface design
3. Forms of motif- Natural, stylized, simplified, geometrical, abstract
4. Vector Based softwares- Coreldraw/Inkscape/any open source software
5. Raster Based softwares- Photoshop/Photopea/any open source software
6. Brain storming, moodboard and theme board
7. Design repeats and colour ways
8. Digital development of seamless patterns
9. Application of digitally developed patterns and repeats to various textile products
10. Design Project: Product development using self created digital patterns*

**Design project should integrate design principles, processes and design thinking to develop a textile design, showcasing skills in design development and execution.*

Essential Readings

UNIT I

This unit introduces the basic elements and principles that form the foundation of textile design. It covers the elements of design—line, colour, texture, shape, form, and space—and explains their role in creating effective textile compositions. The principles of design, including balance, rhythm, proportion, emphasis, harmony, and unity, are discussed in relation to visual organization and layout. The unit also highlights visual composition techniques and distinguishes between the functional and decorative aspects of textile design.

- Brommer, G. F. (2000). *Elements and principles of design: Student guide with activities (Art appreciation ser.)*. Crystal Productions.Lauer, D. A., & Pentak, S. (2012). Design Basics. Cengage Learning.
- Lester, J. (2013). *Visual Research: An Introduction to Research Methodologies in Graphic Design*. Bloomsbury.
- Wong, W. (1993). *Principles of Form and Design.* John Wiley & Sons.
- Zelanski, P., & Fisher, M. P. (2011). *Design Principles and Problems.* Cengage Learning.

UNIT II

This unit introduces the concept of forecasting and its importance in textile and fashion design and explains different types of trends such as micro, macro, fad, classic, and seasonal trends. This unit also provides an overview of major art movements and their influence on design, highlighting the evolution of artistic styles, themes, and techniques across different periods. The unit also focuses on the development of mood boards and theme boards as visual tools to communicate trend directions and design concepts.

- Ambrose, G., & Harris, P. (2011). *Design Thinking*. AVA Publishing.
- Arnason, H. H., & Mansfield, E. C. (2013). *History of Modern Art.* Pearson.
- Bhardwaj, V., & Fairhurst, A. (2021). *Fast Fashion, Sustainability, and the Ethical Appeal of Luxury Brands*. Routledge.
- Brannon, E. L. (2011). *Fashion Forecasting.* Fairchild Books.
- Brown, T. (2009). *Change by Design.* Harper Business.
- Gombrich, E. H. (2006). *The Story of Art.* Phaidon Press.
- Holland, G., & Jones, R. (2017). *Fashion Trend Forecasting*. Laurence King Publishing.
- Honour, H., & Fleming, J. (2009). *A World History of Art.* Laurence King Publishing.
- Jackson, T., & Shaw, D. (2009). *Mastering Fashion Marketing.* Palgrave Macmillan.
- Kaul, M. (1961/Updated Editions). *Trends in Indian Painting: Ancient, Medieval, Modern*. Dhoomimal Ramchand. (Classic Indian text).
- Kelley, T., & Kelley, D. (2013). *Creative Confidence: Unleashing the Creative Potential Within Us All.* Crown Business.
- Liedtka, J., & Ogilvie, T. (2011). *Designing for Growth: A Design Thinking Tool Kit for Managers.* Columbia University Press.
- Naik, Shailaja D. (2010). *CAD in Clothing and Textiles*. New Age International Publishers.

- Plattner, H., Meinel, C., & Leifer, L. (2011). *Design Thinking: Understand – Improve – Apply.* Springer.
- Prakash, V. (2020). O*ne Continuous Line: Art, Architecture and Urbanism of Aditya Prakash.* Mapin Publishing. (Indian context; relevant art/design)
- Raymond, M. (2010). T*he Trend Forecaster's Handbook.* Laurence King Publishing.
- Singh, R. (2023). *Fashion Forecasting and Trend Analysis.* Bloomsbury India. (Indian publication; recent)
- Wilson, J. A. (2001). *A Handbook of Textile Design; Principle, Process and Practice.* (1 ed.) Woodhead Publishing.

Suggested Readings

- Frings, G. S. (2007). *Fashion: From Concept to Consumer* (9th ed.). Prentice Hall.
- Fiell, C., & Fiell, P. (2002). *Graphic Design for the 21st Century*. Taschen.
- Bonnici, A. (2019). *Textile Design Theory in Practice*. Bloomsbury.
- *Eckert, Claudia & McFadden, Margaret (2010). Computer-Aided Design for Fashion and Textiles. Woodhead Publishing.*
- Forecasting Websites- WGSN – *https://www.wgsn.com,* Fashion Snoops – *https://www.fashionsnoops.com,* Pantone Color Institute – *https://www.pantone.com,*
- Softwares- Adobe Photoshop / Illustrator – *https://www.adobe.com,* CorelDRAW Graphics Suite – *https://www.coreldraw.com,* Inkscape – *https://inkscape.org,* Photopea– *https://www.photopea.com*

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

GLOBAL COUTURE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Global Couture	4	3	1	0	As per admission criteria	Nil

Learning Objectives

- Understand the evolution and structure of global couture and fashion systems across regions.
- Analyse global fashion markets, value chains, and trade policies that shape international apparel. flows.
- Evaluate the creative, cultural and organisational dynamics of iconic and emerging couture houses and designers.
- Examine contemporary issues in couture, including identity, inclusivity, technology, sustainability and ethics.
- Apply global fashion forecasting tools and trend intelligence to conceptualise couture-oriented design directions.

Learning Outcomes

- Explain major transformations in global couture and identify the role of established and emerging fashion capitals.
- Interpret global sourcing patterns, production geographics, and the impact of WTO and free-trade agreements on fashion markets.
- Critically compare global designers and couture houses, recognising their creative leadership and evolving narratives.
- Analyse how culture, identity, technology, and sustainability concerns shape contemporary couture practices.
- Use forecasting principles and trend platforms to generate trend-based couture concepts supported.

THEORY
(Credits 3 ; Hours 45)

UNIT I: Global Fashion Systems & Couture Dynamics 12 Hours

This unit introduces the evolution of global couture and the functioning of international fashion systems. It covers global value chains, trade agreements and the significance of fashion capitals.

- Evolution of global couture
- International fashion markets and global value chains.
- Shifting production geographics, Offshore sourcing and low-cost manufacturing countries.
- WTO and free trade agreements on global apparel trade
- Established fashion capitals: Paris, Milan, New York, London, Tokyo
- Emerging global fashion cities: Seoul, Shanghai, Dubai, Copenhagen, Johannesburg.

UNIT II: Global Designers and Couture Houses 12 Hours

This unit explores iconic global designers, the development of couture houses and the role of creative leadership. It also examines emerging designers and India's evolving couture ecosystem.

- Iconic global designers: European, American, Japanese, and Asian
- Evolution of couture houses
- Role of creative leadership
- Emerging international designers and new couture narratives
- Indian couture ecosystem: leading and contemporary couturier

UNIT III: Culture, Identity & Contemporary Issues in Couture 11 Hours

This unit examines how culture, identity and contemporary socio-environmental issues shape global couture. It includes inclusivity, technology-driven couture, sustainability and ethical practices.

- Culture, heritage and identity in global couture.
- Gender-neutral and inclusive couture design
- Technology-driven couture: digital fashion, virtual design and AI.
- Sustainability and environmental challenges in fashion
- Ethical and fair-trade practices

UNIT IV: Global Fashion Forecasting & Trend Intelligence 10 Hours

This unit provides the fundamentals of forecasting and trend using global trend platforms. It focuses on analysing macro/micro trends and translating them into couture concepts.

- Fundamentals of forecasting and trend theory
- Macro, micro, and seasonal trend development.
- Global trend intelligence platforms: WGSN, Trend Union, Fashion Snoops
- Direction-setting: colours, materials, silhouettes and details.
- Trend interpretation and translation into conceptual couture designs

TUTORIAL

(Credits 1 ; Hours 15)

Visits to haute-couture stores/ production houses and social media platforms. Presentations and projects would be the outcome

1. Technical analysis of works of iconic fashion designers
   Discussion - Trends, elements of design, raw material analysis, constructional analysis
   Class Activity - Secondary data collection of designer's collection and store visits
2. Interpretation of Fashion trends
   Discussion - Identify patterns, social and cultural context, as well as life cycle tracking
   Class Activity - Online information collection and class presentation
3. Use of technology and bioscience in fashion
   Discussion- Use of smart textiles, new generation fibres, recycled fibres, phase change materials etc
   Class Activity - Review and present/ report any designer collection
4. Analysis of designer collections inspired by traditional textile arts
   Discussion- Review of heritage collections on the ramp
   Class Activity - Review and present/ report any designer collection

Essential readings

UNIT 1

This unit introduces the dynamics of fashion movement in the international markets as well as in the production centres. It deals with the technical competencies of low-cost producing countries and how they have become the epitome of production for labour-intensive products, such as garments. It further elaborates on the evolution of historically eminent fashion capitals, as well as the relatively new fashion centres, their characteristic features, and comparative advantages.

- Breward, C., & Gilbert, D. (Eds.). (2006). *Fashion's world cities.* Berg Publishers.
- Fringes G.S. (2007). *Fashion from Concept to Consumer*, 9th edition, Prentice Hall, New Jersey.
- Stone, E. (2013). *The dynamics of fashion (4th ed.)*. Bloomsbury Publishing India.

UNIT II

The proliferation of infrastructural support and creativity to interpret fashion trends has led to the conceptualisation, creation and showcase of landmark collections by various designers across the globe. Iconic designers are known for their unique-selling-proposition, and have built fashion identity which has changed the face of fashion in the socio-cultural context. Together with the team of stylist, merchandisers, and production workforce, many couture houses have developed their collections periodically in systematic fashion seasons. This unit elaborates on the discussion of various couture houses in India as well as internationally.

- Jani, A, Khosla, S. (2000) *India Fantastique Fashion.* Thames and Hudson Publication

- Palomo-Lovinski, N. (2010). *The world's most influential fashion designers: Hidden connections and lasting legacies of fashion's iconic creators.* Barrons Educational Series Inc.
- Troy, N. J. (2002). *Couture culture: A study in modern art and fashion.* MIT Press.

UNIT III

The shaping of fashion as a product is driven by the new age variables which depend on the demographic and technological changes in the marketing environment. There is a distinct shift in consumer behaviour and technological life cycle which are addressed by the designers in order to target a niche in design. These could be "design for inclusivity" or "design for gender neutrality". As climate change and sustainability issues are increasingly gaining momentum, couturiers are further classified and identified with "minimalistic fashion", "ethical fashion" and "sustainable fashion".

- Bowles, H. (2023). I*ndia in fashion- The impact of Indian dress and textiles on the fashionable imagination. NMACC, India*. Rizzoli International Publications
- https://www.lakmefashionweek.co.in/home/sustainability
- https://www.theartsfamily.com/artists/kallol-datta

UNIT IV

The attributes of fashion from acceptance to rejection, are governed by trends which are predicted in a scientific manner by social scientists. They capture the nuances of society and industry in a qualitative as well as quantitative manner and showcase the elements of design in the form of "Trends" which dictate design development. This unit deals with the trajectory of trends, their interpretation for individualistic mood boards and product design. It elaborates on various international agencies 'forecasts, which are followed by the fashion fraternity – textile and fashion designers, producers, visual merchandisers and stylists.

- Holland, G., & Jones, R. (2017). *Fashion trend forecasting.* Laurence King Publishing.
- Kim Eundeok, Fiore A. M. & Hyejeong Kim (2021). *Fashion Trends, 2nd Ed.* Bloomsbury Publication
- https://heuritech.com/fashion-trends-2026/

Suggested Readings

- Barnard, M. (Ed.). (2007). *Fashion theory: A reader.* Routledge.
- Barthes, R. (2006). *The language of fashion (A. Stafford, Trans.).* Bloomsbury.
- Brannon, E. L. (2010). *Fashion forecasting (3rd ed.).* Fairchild Books/Bloomsbury.
- Bowles, H. (2011). *The world of couture.* Abrams.
- R. Andrew, (2018) *Key Concepts for the Fashion Industry*, Bloomsbury Publishing, India.
- Right E. B. (2022). *Vintage Fashion: Collecting and Wearing Designer Classics.* Welbeck Publishing.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
FASHION MARKETING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Fashion Marketing	**4**	**3**	**0**	**1**	**As per admission criteria**	Nil

Learning Objectives

- To understand the foundational concepts, scope, and significance of fashion marketing in a dynamic market environment.
- To analyze consumer behaviour, market segmentation, targeting strategies, and fashion-specific buying patterns.
- To apply principles of product planning, branding, positioning, and differentiation to fashion products.
- To evaluate pricing strategies and their suitability for diverse product categories and life-cycle stages in the fashion industry.
- To create integrated marketing communication plans using traditional, digital, and influencer-driven promotional tools tailored for fashion brands.
- To develop customer-driven marketing mix strategies and utilize analytical and technological tools to assess digital marketing, e-commerce models, and emerging trends.

Learning Outcomes

Students will be able to:

- Define and explain the key concepts of fashion marketing, market environment, and consumer behaviour.
- Comprehend various consumer behaviour determinants, segmentation bases, and targeting approaches relevant to fashion markets.
- Apply product planning concepts, including product mix, product life cycle strategies, positioning, brand elements and branding strategies to real-world fashion scenarios.
- Evaluate new-product pricing, product-mix pricing, and pricing adjustment strategies appropriate for fashion products.
- Design and assess integrated marketing communication (IMC) strategies incorporating advertising, digital media, influencers, stylists, and content creators as well as digital marketing tools.

THEORY

(Credits 3; 45 Hours)

UNIT I: Understanding Marketing Management and Consumer Behaviour 12 Hours

This unit introduces the fundamentals of marketing environment, segmentation, and targeting. It covers key consumer behaviour concepts and the buying decision process.

- Importance and scope of Marketing
- Analysing marketing environment
- Market segmentation and targeting
- Consumer Behaviour Analysis
- Factor Influencing consumer Behaviour
- Type of buying decision behaviour
- Buying decision process

UNIT II: Product Planning and Branding 13 Hours

This unit explores product mix, product life cycle, and differentiation strategies and introduces branding elements and strategies used by fashion brands.

- Product line, Product mix and Product classification
- Product life cycle and strategies
- Product positioning and Differentiation strategies
- Brand elements-tangible, intangible
- Branding Strategies

UNIT III: Pricing 8 Hours

This unit covers essential pricing strategies for new and existing products, product mix pricing and price adjustment strategies in the fashion market.

- New Product Pricing strategies
- Product mix pricing strategies
- Pricing adjustment strategies

UNIT IV: Marketing Communication and Promotion 12 Hours

This unit presents integrated marketing communication and promotion techniques and also focuses on digital marketing for fashion brands.

- Integrated marketing communication strategy

- Development and managing advertising programs
- Sales promotion and Personal selling
- Marketing in the digital world

  – Concept and features
  – Key digital channels: Content and Email marketing, Social media marketing for fashion brands
  – Role of influencers

PRACTICAL
(Credit 1; Hours 30)

1. Analysis of Demographics of Indian market
2. Lifestyle segmentation (VALS) in fashion industry
3. Idea generation for a new product
4. Brand study

   – Tangible and Intangible elements
   – Brand Portfolio
   – Brand Positioning and Differentiation

5. Review product pages from leading e-commerce platforms with respect to Fabric specifications, Fit guides and sizing tools, High-resolution imagery and videos, User-generated reviews
6. Analysis of AI shopping assistants in E-commerce

Essential Readings

UNIT 1:

This unit provides an overview of marketing management principles with specific reference to the fashion sector. It familiarizes students with the scope and relevance of marketing and examines how internal and external environmental factors influence marketing decisions. The unit also introduces market segmentation and targeting approaches. The unit also gives in-depth insight into consumer behaviour, exploring various factors influencing consumers, along with different buying decision patterns and stages, enabling learners develop the ability to analyze consumer behaviour.

- Babu, Ramesh V., Arunraj A. (2025) *Fashion Marketing Management: WPI* (chapter 1-2)
- Schiffman, L. G. & Wisenbilt, J. (2019) Consumer Behaviour 12th Ed.: Pearson
- Easy, M. (2020) *Fashion Marketing* (4th Edition, chapter 1-5) Wiley-Blackwell

- Jackson, T., & Shaw, D. (2009) *Mastering Fashion Marketing*: Palgrave Macmillan (chapter 1-3)
- Kotler, P., Keller, Chernev, A., Sheth Jagdish N., Shainesh G. (2025) *Marketing Management (*17h*ed.*, chapters 1-4, 6) Pearson.
- Posner, H. (2021) *Marketing Fashion: Strategy, branding and promotion* (3rd Ed. Chapter 1,2,4) Laurence King Publishing

UNIT II:

This unit examines the strategic planning and management of fashion products and brands. It introduces key concepts related to product lines, product mix, and product categorization, along with an analysis of product life cycle stages and associated strategies. The unit highlights the importance of positioning and differentiation in creating market distinction. It further explores branding by identifying both tangible and intangible brand elements and reviews various branding approaches used by fashion organizations to establish identity, credibility, and customer loyalty.

- Babu, Ramesh V., Arunraj A. (2025) *Fashion Marketing Management*: WPI (chapter 3)
- Easy, M. (2020) *Fashion Marketing* (4th Edition, chaps 5-6) Wiley-Blackwell
- Jackson, T., & Shaw, D. (2009) *Mastering Fashion Marketing*: Palgrave Macmillan (chapter 3, 4, 8)
- Kotler, P., Keller, Chernev, A., Sheth Jagdish N., Shainesh G. (2025) *Marketing Management* (17h*ed.*, chaps7-11) Pearson.
- Posner, H. (2021) *Marketing Fashion: Strategy, branding and promotion* (3rd Ed., chap 5) Laurence King Publishing

UNIT III:

This unit focuses on pricing decisions as a vital component of fashion marketing strategy. It addresses pricing approaches adopted for new product launches as well as for existing product lines. The unit also discusses product mix pricing and different pricing adjustment methods employed to suit changing market demands and consumer segments. Through this study, students gain insight into how pricing influences consumer perception, market competitiveness, and overall brand performance.

- Easy, M. (2020) *Fashion Marketing* (4th Edition, chapter 7) Wiley-Blackwell
- Jackson, T., & Shaw, D. (2009) *Mastering Fashion Marketing*: Palgrave Macmillan (chapter 5)
- Kotler, P., Keller, Chernev, A., Sheth Jagdish N., Shainesh G. (2025) *Marketing Management* (17h*ed.*, chapter 12) Pearson.
- Babu, Ramesh V., Arunraj A. (2025) *Fashion Marketing Management: WPI* (chapter 8)

UNIT IV:

This unit explores the role of communication and promotional activities in building and sustaining fashion brands. It introduces the concept of integrated marketing communication and examines the planning and execution of advertising programs. The unit also covers sales

promotion techniques and personal selling practices. Additionally, it emphasizes the growing importance of digital marketing, outlining its key characteristics and major digital channels such as content marketing, email marketing, and social media platforms. The influence of digital opinion leaders and influencers on fashion consumers is also analyzed.

- Belch, E. G. and Belch, A.M. (2003). Advertising and Promotion- An integrated marketing communications perspective 6th Ed.: Tata McGraw-Hill publishing company ltd
- Easy, M. (2020) *Fashion Marketing* (4th edition, chap 9) Wiley-Blackwell
- Barker, M., Barker, D., Bormann, N., & Neher, K., (2017) *Social Media Marketing*: A strategic approach 3rd Ed. : Cengage Learning India Pvt. Ltd
- Jackson, T., & Shaw, D. (2009) *Mastering Fashion Marketing*: Palgrave Macmillan (chap 6)
- Kotler, P., Keller, Chernev, A., Sheth Jagdish N., Shainesh G. (2025) *Marketing Management* (17h edition, chaps13-17) Pearson.
- Posner, H. (2021) *Marketing Fashion: Strategy, branding and promotion* 3rd Ed.: Laurence King Publishing (chap 6)

Suggested Readings

- Chaffey, D., & Ellis-Chadwick, F. (2019) *Digital Marketing* 7th Ed.: Pearson
- Sachdeva, Nidhi. (2018) *Fashion: Marketing, Merchandising and Buying.* Heritage Publishers
- Diamond, J., Diamond, E. and Litt, S.D. (2006) *Fashion Retailing- A Multi- Channel Approach*: Bloomsbury Publishing Inc.
- Jackson, T., & Shaw, D. (2001) *Fashion Retail* : Palgrave Macmillan
- Jain, J.N. and Singh, P.P. (2007) *Modern Marketing Management- Principles and Techniques*. New Delhi: Regal Publications.
- Poloian, G.L.(2009). Multichannel Retailing : Fairchild Books-New York.
- Posner, H. (2015) Fashion buying 3rd Ed. : Wiley

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
STATISTICS AND DATA MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Statistics and Data Management	4	3	0	1	As per admission criteria	Nil

Learning Objectives

- To develop understanding of fundamental and advanced statistical concepts used in research and data analysis.
- To enable students to apply descriptive and inferential statistics for real-world decision-making.
- To strengthen ability to formulate hypotheses, select appropriate statistical tests, and interpret outputs.
- To prepare students for quantitative research, industry analytics, and academic data projects.
- To train students in using Excel and SPSS for data handling, visualization, and interpretation.

Learning Outcomes

The students would be able to:

- Explain key concepts in descriptive and inferential statistics.
- Organize, clean, and summarize datasets using appropriate statistical tools.
- Apply probability distributions, correlation, regression, and hypothesis testing.
- Use Excel and SPSS for data visualization, statistical testing, and reporting.
- Interpret statistical outputs and draw valid conclusions for research decisions.
- Design and execute quantitative data analysis workflows independently.

THEORY

(Credits 3; Hours 45)

UNIT I: Introduction and descriptive Statistics **12 Hours**

This unit will introduces the foundations of statistics and techniques for summarizing and describing data.

- Definition, scope, and applications of statistics
- Types of data: qualitative and quantitative
- Scales of measurement
- Classification & tabulation of data
- Graphical and visual representations
- Measures of central tendency: mean, median, mode
- Measures of dispersion: range, variance, standard deviation, coefficient of variation
- Skewness and kurtosis: meaning and interpretation

UNIT II: Probability and Probability Distributions **10 Hours**

This unit explores probability concepts and major statistical distributions.

- Basic probability concepts: Addition & multiplication theorems
- Random variables: discrete and continuous variable
- Binomial, Poisson and Normal distributions
- Sampling theory & sampling distributions
- Central Limit Theorem

UNIT III: Correlation and regression **8 Hours**

This unit focuses on analysing relationships between variables.

- Correlation: Pearson and Spearman correlation
- Simple linear regression: model, estimation, interpretation
- Multiple linear regression: assumptions, multicollinearity, model building

UNIT IV: Hypothesis Testing and Non-Parametric Methods **15 Hours**

This unit introduces hypothesis testing frameworks and non-parametric alternatives for non-normal data.

- Concept of hypothesis: null & alternative
- Types of errors, significance levels, p-value
- Parametric tests:
    - z-test
    - t-test (one sample, independent, paired)
    - ANOVA- One way
    - Chi-square test
- Non-parametric tests:
    - Mann–Whitney U test
    - Wilcoxon signed-rank test
    - Kruskal–Wallis test

- Interpretation and reporting of statistical results
- Research Conclusion and recommendation

PRACTICAL

(Credits 1; 30 hours)

1. Data Entry, Coding & Cleaning: Importing data, handling missing values, variable labels, Excel formulas.
2. Descriptive Statistics & Visualization: Mean, Standard Deviation, frequency tables, histograms, boxplots (Excel + SPSS).
3. Cross-Tabulation & Chi-Square Test: PivotTables in Excel; Crosstabs in SPSS.
4. Correlation Analysis: Pearson & Spearman correlations; scatterplots.
5. Simple Linear Regression: Trendline in Excel; Regression output in SPSS.
6. Multiple Regression: Model summary, coefficients, interpretation using SPSS.
7. t-Tests: Independent, paired, and one-sample t-tests in SPSS.
8. ANOVA (One-way & Two-way): Running ANOVA and post-hoc analysis.
9. Non-Parametric Tests: Mann-Whitney, Wilcoxon, Kruskal–Wallis in SPSS.
10. Report Generation & Interpretation
11. Preparing APA-style tables, graphs, and interpretations in Excel/SPSS.

Essential Readings:

UNIT I

This unit describes the foundations of statistics and techniques for summarizing and describing data.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.). Pearson Prentice Hall.
- Bernard, H. R. (2000). *Social research methods: Qualitative and quantitative approaches*. Sage.
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.). CreateSpace Independent Publishing Platform.
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*. Wiley.

UNIT II

This unit deals with the probability concepts, rules of probability, discrete and continuous distributions (Binomial, Poisson, Normal).

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).

- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*.

UNIT III

This unit focuses on relationship between variables, correlation coefficients, simple and multiple regression, regression assumptions.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Muijs, D. (2004). *Doing quantitative research in education with SPSS*. Sage.

UNIT IV

The unit deals with statistical inference such as t-tests, ANOVA, Chi-square, non-parametric tests (Mann-Whitney, Wilcoxon, Kruskal-Wallis), decision making.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*.
- Muijs, D. (2004). *Doing quantitative research in education with SPSS*.

Suggested Readings

- Field, A. (2025). *Discovering Statistics Using IBM SPSS Statistics* (6th ed.). Sage.
- Kalyanaraman, K., Ramanathan, H. N., & Harikumar, P. N. (2025). *Statistical Methods for Research: A Step-by-Step Approach Using IBM SPSS*. Atlantic Publishers.
- Healey, J. F., & Donoghue, C. (2021). *Statistics: A Tool for Social Research and Data Analysis* (11th ed.).

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

COMMERCIAL FABRICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Commercial Fabrics	4	3	1	0	As per admission criteria	Nil

Learning Objectives

- To develop a foundational understanding of textile fibres, yarns, and fabric construction methods.
- To enhance the knowledge of commercially available fabrics, their properties, and identification techniques.
- To analyse fabric performance, finishes, and suitability for different end uses.
- To equip the students with skills to select appropriate fabrics based on structure, appearance, cost, and application.

Learning Outcomes

Students will be able to:

- Understand the fundamental components, structure, and construction of different fabrics.
- Identify and distinguish between various woven, knitted, non-woven, and traditional Indian textiles.
- Analyse fabric properties, finishes, and end uses for appropriate selection in apparel and textiles.
- Apply practical knowledge to evaluate fabric samples, market options, and industry trends.

THEORY
(Credits 3; Hours 45)

UNIT I: Components of Fabric Structure **10 Hours**

- Fibres and yarns
- Methods of fabric construction
- Fabric finishing: dyeing, printing, and functional/aesthetic finishes
- Sustainability and chemical compliance standards (OEKO-TEX, REACH, GOTS, GRS, BCI, Blusign, RCS)

UNIT II: Commercially Important Woven Fabrics – Identification, Properties & End Uses **12 Hours**

- Cellulosic fabrics: Mulmul, Voile, Organdy, Cambric, Poplin, Cotton, Canvas, Denim, Casement, Terry, etc.
- Silk and wool fabrics: Silk crepe, Georgette, Chiffon, Organza, Satin, Taffeta, Tweed, Tussar, Wool twill, etc.
- Man-made and blended fabrics: Art silk, Lycra blends, Polyester, Viscose, Moss crepe, Georgette, etc.

UNIT III: Commercially Important Knitted & Non-Woven Fabrics – Identification, Properties & End Uses **12 Hours**

- Knitted fabrics: Terry knit, Jersey, Rib knit, Interlock knit, Piqué, Velour, etc.
- Non-woven fabrics: Types, weights, and applications
- Others: Leatherette, Suede

UNIT IV: Traditional Indian Fabrics – Identification, Characteristics & Uses **11 Hours**

- Embroideries: Kantha, Phulkari, Chikankari, Kasuti, Kutch, etc.
- Woven fabrics: Brocade, Jamdani, Baluchari, Chanderi, Maheshwari, Kanjeevaram, etc.
- Dyed/Printed fabrics: Bandhani, Kalamkari, Ikat, Patola, Dabu prints, Ajrakh prints, etc.

TUTORIAL

(Credits 1; 15 hours)

1. Examine and differentiate various natural, man-made, and blended fibres and yarns based on appearance, feel, and basic properties.
2. Collect and classify commonly used woven fabrics, noting their weave type, characteristics, and typical applications.
3. Assemble samples of knitted fabrics and identify structural variations such as single jersey, rib, interlock, and pique.
4. Gather samples of non-woven materials and study their methods of manufacture, features, and end uses.
5. Observe and document different construction methods such as weaving, knitting, braiding, and felting, highlighting their influence on fabric performance.
6. Explore selected Indian traditional fabrics, understanding their motifs, techniques, regional specialties, and cultural significance.
7. Prepare and present a brief report analysing selected fabrics in terms of fibre content, construction, properties, finishes, and suitable end-uses

Essential Readings

UNIT I

This unit covers the basic building blocks of textiles including fibres, yarns, fabric construction methods, and finishing processes. Emphasis is also placed on sustainability, eco-labels, and chemical compliance standards followed in the Indian and global textile industry

- Corbman, B. P. (2016). Textiles: Fiber to fabric (6th ed.). McGraw-Hill Education.
- Kadolph, S. J. (2017). Textiles (12th ed.). Pearson Education.
- Gohl, E. P. G., & Vilensky, L. D. (2013). Textile science: An explanation of fibre properties (2nd ed.). CBS Publishers & Distributors.
- Majumdar, P. K. (2010). Textile fibres. PHI Learning.
- Fletcher, K., & Grose, L. (2012). Fashion & sustainability: Design for change. Laurence King.

UNIT II

This unit introduces commonly used woven fabrics made from natural, man-made, and blended fibres, focusing on their identification, properties, and suitability for various end uses in apparel and home furnishings.

- Hatch, K. L. (2018). Textile science. Bloomsbury Publishing.
- Tortora, P. G., & Johnson, I. (2019). The Fairchild books dictionary of textiles (9th ed.). Bloomsbury.
- Banerjee, S. (2011). Textile science fundamentals. PHI Learning.
- Corbman, B. P. (2016). Textiles: Fiber to fabric. McGraw-Hill Education.

UNIT III

This unit deals with basic knit structures, types of knitted fabrics, non-woven textiles, and their properties, applications, and performance characteristics in apparel and technical textiles.

- Spencer, D. J. (2018). Knitting technology (4th ed.). Woodhead Publishing.
- Russell, S. (2016). Handbook of nonwovens. Woodhead Publishing.
- Anbumani, N. (2007). Knitting fundamentals, machines, structures and developments. New Age International.
- Ajmeri, J. R., & Ajmeri, C. J. (2016). Nonwoven textiles: Technology. New India Publishing Agency.
- Hearle, J. W. S., & Morton, W. E. (2008). Physical properties of textile fibres. Woodhead Publishing.

UNIT IV

This unit focuses on traditional Indian textiles including embroideries, woven fabrics, and surface-designed textiles, highlighting regional diversity, techniques, cultural importance, and contemporary relevance.

- Chattopadhyay, K. (2019). Indian textiles. Wiley Eastern.
- Biswas, K. (2018). Textiles of India. National Book Trust.
- Dhamija, J. (2004). Craft traditions of India. National Handicrafts & Handlooms Museum.

- Varadarajan, L. (2015). Indian costume and textiles. Prentice Hall of India.

Suggested Readings

- Jain, J., & Jain-Neubauer, J. (2015). *The spectrum of Indian textiles.* Niyogi Books
- Gillow, J., & Barnard, N. (2015). *Traditional Indian textiles*. Thames & Hudson.
- Rastogi. D(Ed)and Chopra S. (Ed)(2017) *Textile Science*, India : Orient Black Swan.
- Sekhri S. (2011) *Textbook of Fabric Science: Fundamentals to Finishing*, Delhi: PHI Learning

DISCIPLINE SPECIFIC ELECTIVE COURSE
WOMEN'S WEAR: CONCEPT TO CREATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Women's Wear: Concept to Creation	4	2	0	2	As per admission criteria	Nil

Learning Objectives

- To gain an understanding and knowledge of the industry involved in women's wear.
- To develop skills in designing a theme-based collection of garments for women's wear.
- To apply advanced pattern making and construction techniques for women's wear.
- To understand the role of fashion accessories in complementing the outfit.

Learning Outcomes

The students would be able to:

- Understand the market involved in women's wear.
- Comprehend the components of design and their application for line development
- Independently design a line for women's fashion wear
- Describe the role of fashion accessories in defining the overall look.

THEORY
(Credit 2; 30 Hours)

UNIT I: Introduction to Women's Wear **6 Hours**

This unit introduces the student to the growth and development of women's wear industry.

- Scope and significance of Women's wear within the fashion industry
- Classification of women's wear: western/ethnic / fusion / contemporary; formal/casual; occasion wear, resort wear, intimate wear, maternity, plus-size etc.
- Key eras shaping women's fashion and global influences
- Market segmentation in women's wear based on pricing strategies, brand tiers (Haute couture, luxury, diffusion, high street etc.)

UNIT II: Research, Trends & Concept Development **10 Hours**

This unit covers the process of trend forecasting and the understanding of consumer profiles. It also helps in building the concept story for line development.

- Trend forecasting- steps, drivers of change: socio-cultural, technological, economic, environmental, forecasting agencies, fashion seasons
- Consumer types and profiling based on demographics, psychographics, lifestyle etc.
- Building a concept story for line development- design idea/inspiration, mind map, theme/mood board
- Translating concept into colours, silhouettes, design details, textures, fabrics

UNIT III: Product Development and Presentation **6 Hours**

This unit focuses on line planning and design sketching, leading to product development and its presentation.

- Line planning and range development
- Pattern making, fabric sourcing, garment prototype and fit analysis, garment costing
- Design documentation and presentation of line/collection: Lookbooks, runway, digital presentation, collection storytelling, visual strategies

UNIT IV: Fashion Accessories for Women **8 Hours**

This unit gives an overview of various accessories used to complete an overall look in women's fashion.

- Scope and role of accessories in completing the look
- Types of accessories- bags, purses, footwear, scarves and stoles, hats, gloves, hosiery, jewellery, watches and belts
- Materials and components used in accessories

PRACTICAL
(Credit 2; 60 Hours)

1. Design inspiration for line development and working on a mind map
2. Development of Theme/mood board and story board including colours, silhouettes, textures, fabrics, motifs, design details
3. Line planning, customer profile, sketching, and finalization of design collection based on the theme
4. Developing patterns for two of the above selected designs using flat pattern making or draping and planning pattern layout, preparation of Teck-pack
5. Fabric sourcing, cutting and stitching of the garments, incorporating advanced sewing skills
6. Fit evaluation and finalization, portfolio presentation

Essential/Recommended Readings

UNIT I:

This unit introduces students to the growth, scope, and importance of women's wear within the fashion industry. It covers the classification of women's apparel based on style, function, and consumer needs, including western, ethnic, fusion, formal, casual, and specialized categories. The unit examines key historical eras and global influences shaping women's fashion. It also provides an understanding of market segmentation, pricing strategies, and brand tiers such as haute couture, luxury, diffusion, and high-street fashion.

- Brown, P., & Rice, J. (2014). *Ready to wear apparel analysis* (4th ed.). Pearson Education. New Delhi
- Dickerson, K. G. (2007). *Inside the fashion business*. Upper Saddle River, NJ: Pearson Education, Inc.
- Frings, G. S. (2014). *Fashion: From Concept to Consumer* (10th ed.). Pearson Education.
- Tate, S. L., & Edwards, M. S. (2003). *Inside fashion design* (5th ed.). Pearson Education, Inc..

UNIT II:

This unit focuses on the research-driven design process essential for women's wear development. Students learn the principles of trend forecasting, including drivers of change and fashion cycles. The unit emphasizes consumer profiling through demographic, psychographic, and lifestyle analysis. It also develops skills in concept creation, enabling students to translate inspiration into cohesive design ideas using mood boards, colour stories, silhouettes, fabrics, and textures.

- Dragt, E. (2017). *How to Research Trends: Move Beyond Trendwatching to Kickstart Innovation*. BIS Publishers.
- Raymond, M. (2010). *The Trend Forecaster's Handbook*. Laurence King Publishing.
- Renfrew, E., & Renfrew, C. (2009). *Basics fashion design 04: Developing a collection*. Switzerland: Ava Publishing SA.
- Stamper, A. A., Sharp, S. H., & Donnell, L. B. (2005). *Evaluating apparel quality*. New York, NY: Fairchild Fashion Group.

UNIT III:

This unit introduces students to the product development process from concept to finished collection. It covers line planning, range development, and design translation into garments. Students gain foundational knowledge of pattern making, fabric sourcing, prototyping, fit analysis, and garment costing. The unit also emphasizes professional presentation techniques, including design documentation, lookbooks, collection storytelling, and digital or runway presentations.

- Armstrong, H. J. (2019). *Patternmaking for Fashion Design* (6th ed.). Pearson Education
- Brannon, E. L. (2011). *Designer's guide to fashion apparel*. New York, NY: Fairchild Books.
- Glock, R. E., & Kunz, G. I. (2014). *Apparel Manufacturing: Sewn Product Analysis* (5th ed.). Pearson.
- Hopkins, J. (2013). *Fashion Design: The Complete Guide*. AVA Publishing.
- San Martín, M. (2009). *Field guide: How to be a fashion designer*. Beverly, MA: Rockport Publishers.

UNIT IV:

This unit provides an understanding of the role of fashion accessories in enhancing and completing women's wear. It explores various types of accessories, including bags, footwear, scarves, jewellery, belts, and watches. The unit introduces materials, components, and construction considerations used in accessory design. Emphasis is placed on the aesthetic, functional, and market relevance of accessories within contemporary women's fashion.

- Dhir, Y.J. (2024). *Fashion Accessories: A Complete Guide to Raw Materials, Construction Methods and Styles* (1st ed.). CRC Press.
- Jones, S. J. (2011). *Fashion Design: Accessories*. Laurence King Publishing.
- Lau, J. (2021). *Basics fashion design 09: Designing accessories: Exploring the design and construction of bags, shoes, hats and jewellery*. Bloomsbury Publishing.
- Tortora, P. G., & Abling, B. (2003). *Encyclopaedia of Fashion Accessories*. Fairchild Books.

Suggested Readings

- Abling, B. and Maggio K. (2008) Integrating Draping, Drafting and Drawing, ISBN: 9781563674860, Fairchild books.
- Aldrich, W. (2008) Metric Pattern Cutting for Women's Wear, ISBN 10: 1405175672 / ISBN 13: 9781405175678, Wiley Blackwell Publication.
- Crawford. C.A. (2008), A Guide to Fashion Sewing, Fourth Edition. Fairchild Publications, Inc., New York.
- Crawford. C.A. (2018), The Art of Fashion Draping, ISBN: 9781501330292, Fairchild books.
- DiMarco, S., (2010) Draping Basics, ISBN: 9781563677366, Fairchild books.
- Fogg, M. (2013) Fashion The Whole Story. Thames & Hudson Ltd., London.
- Shoben, M.M. and Ward, J.P. (2000) Pattern Cutting and Making Up Volume 2, Revised Edition, LCFS Fashion Media

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
TECHNICAL TEXTILES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Technical Textiles	4	3	1	0	As per admission criteria	Nil

Learning Objectives

- To develop an understanding of the concepts, scope, and functional requirements of technical textiles.
- To critically examine the application of technical textiles across diverse sectors such as construction, healthcare, transport, geotechnical engineering, and industry.

Learning Outcomes

Students will be able to:

- Understand the properties and performance of a range of technical textiles.
- Analyse appropriate uses for a variety of fabrics, yarns and fibres in various areas like construction, healthcare, transport etc.
- Generate and develop creative ideas for the use of technical textiles.

THEORY

(Credits 3; Hours 45)

UNIT I: Introduction to Technical Textiles **5 Hour**

This unit covers the fundamentals of technical textiles, including their importance, scope and classification.

- Overview of technical textiles
- Importance and scope
- Classification of technical textiles

UNIT II: Technical Fibers, Yarns, fabrics and composites **16 Hour**

This unit highlights the types, properties and structural forms of technical fibers, yarns and fabrics, along with fundamentals of textile composites and their manufacturing processes.

- Technical fibers: Synthetic, Regenerated and Natural.

- Technical yarns: Filament, Spun and Composite
- Technical fabrics: woven, knitted, nonwoven, braided, laminated, coated, multilayer and 3D structures for technical applications.
- Textile composites: reinforcement textiles, matrix materials, composite manufacturing processes.

UNIT III: Application Area **16 Hour**

This unit provides an overview of major technical textile sectors, emphasizing functional requirements and end-use applications.

- Agrotech
- Buildtech
- Clothtech
- Meditech
- Oekotech
- Protech
- Indutech
- Packtech
- Hometech
- Geotech
- Sporttech
- Mobiltech
- Military textiles

Unit IV: New Developments in Technical Textiles **8 Hour**

Explores recent innovations and their applications.

- Smart textiles
- Shape-memory, phase change material (PCM)
- Energy harvesting textiles
- Wearable sensors and actuators
- E-textiles and conductive materials

TUTORIAL

(Credits 1; Hours 15)

1. Fabric sourcing of various technical textile fabrics

Activity: Market/industry visits to source samples of technical textiles. Students will compare sourced fabrics based on construction, performance, cost, and prepare a brief analytical report.

2. Study of geometrical parameters of industrial textile fabrics

Discussion: Understanding yarn density, fabric thickness, porosity, cover factor, and other geometrical parameters related to technical performance in technical textiles. Activity: Laboratory evaluation of geometrical parameters for selected technical textile fabrics. Students will measure and interpret results to relate structure with performance.

3. Field visit on technical textile materials

Activity: Field/industry visits to technical textile manufacturing or trading units to observe materials, technologies, and applications. Students will prepare a detailed visit report.

4. Project work on any one Area of technical textiles

Discussion: Selection of a focused topic in technical textiles material, process, product innovation, testing, or application area to develop analytical and research skills. Activity: Independent project work involving literature survey, data collection, experimentation (if applicable), and report writing. Students will present findings at the end of the semester.

Essential Readings

UNIT I

This unit introduces the fundamental concepts of technical textiles, emphasizing textiles developed primarily for functional and performance-based applications rather than decorative use. It provides an overview of technical textiles, their evolution, and distinguishing characteristics, followed by a discussion on their importance and expanding scope in various sectors such as healthcare, agriculture, construction, transportation, defense, and environmental protection. The unit also explains the classification of technical textiles based on end-use applications, enabling students to develop a clear conceptual understanding of the field and laying a strong foundation for advanced study in technical fibers, yarns, fabrics, and related technologies.

- Horrocks, A. R., & Anand, S. C. (Eds.). (2000). *Handbook of technical textiles (chapter 1)*. Elsevier.
- Horrocks, A. R. and Anand, S. C. (2015) Handbook of Technical Textiles, second edition, volume 1: technical textile processes, The Textile Institute, Woodhead Publishing.

UNIT II

This unit focuses on the types, properties, and structural forms of materials used in technical textiles, beginning with an in-depth study of technical fibers including synthetic, regenerated, and natural fibers and their performance characteristics. It covers technical yarns such as filament, spun, and composite yarns, followed by technical fabrics produced through weaving, knitting, nonwoven, braided, laminated, coated, multilayer, and three-dimensional structures for specialized applications. The unit also introduces textile composites, emphasizing reinforcement textiles, matrix materials, and fundamental composite manufacturing processes, enabling students to understand the material–structure–property relationship in technical textile products.

- Bunsell, A. R. (2009) Handbook of Tensile Properties of Textile and Technical Fibres, 1st Edition, Woodhead Publishing Series in Textiles.
- Horrocks, A. R., & Anand, S. C. (Eds.). (2000). *Handbook of technical textiles.* Elsevier.

UNIT III

This unit provides a comprehensive overview of the major application sectors of technical textiles, ranging from Agrotech to Military textiles, with emphasis on functional requirements, performance parameters, and end-use applications. It covers diverse areas such as agriculture, construction, medical, environmental protection, personal and industrial safety, packaging, home furnishings, geotechnical engineering, sports, transportation, and defense. Through this unit, students gain insight into how technical textiles are designed and selected based on specific end-use needs and regulatory requirements across different industrial sectors.

- Anand, S.C., Kennedy, J F., Miraftab, M., and Rajendran, S. (2005)Medical Textiles and Biomaterials for Healthcare, Woodhead Publishing Series in Textiles.
- Bartels, V. (2011) Handbook of Medical Textiles, 1st Edition, Woodhead Publishing Series in Textiles.
- Horrocks, A. R., & Anand, S. C. (Eds.). (2000). *Handbook of technical textiles. (chaps 13-18)* Elsevier.
- https://gphisar.ac.in/wp-content/uploads/2022/09/Technical-Textiles-5th-Sem-TT-Study-M.pdf
- https://www.scribd.com/document/696654830/Technical-Textile

UNIT IV

This unit explores recent advancements and emerging technologies in the field of technical textiles, focusing on innovative materials and smart systems. It introduces smart textiles, shape-memory materials, phase change materials (PCM), energy-harvesting textiles, wearable sensors and actuators, and e-textiles with conductive materials. The unit highlights the role of interdisciplinary research and innovation in enhancing functionality, comfort, monitoring, and sustainability, preparing students to understand future trends and research opportunities in technical textiles.

- Tasaltin, N., Nnamchi, P. S., & Saud, S. (Eds.). (2020). *Advanced Functional Materials (chapter 14)*. BoD–Books on Demand.
- Sharma, S., Shukla, S. K., Singh, A., Govender, K. K., & Govender, P. P. (2025). E-Textiles in Biomedicine: Real Time Sensing, Energy Storage, and Therapeutic Applications. *Advanced Materials Interfaces*, e00672. https://doi.org/10.1002/admi.202500672
- Pandey, A., Tiwari, K. P., & Misra, R. Smart Materials for Next-Generation Electronics and Energy Storage.
- Younes, B. (2023). Smart E-textiles: A review of their aspects and applications. *Journal of Industrial Textiles*, *53*, 15280837231215493.https://doi.org/10.1177/1528083723121549

- De Rossi, D., Carpi, F., & Galantini, F. (2009). Functional materials for wearable sensing, actuating and energy harvesting. *Advances in Science and Technology*, *57*, 247-256. https://doi.org/10.4028/www.scientific.net/AST.57.247
- Bunsell, A. R. (2009) Handbook of Tensile Properties of Textile and Technical Fibres, 1st Edition, Woodhead Publishing Series in Textiles.
- Chapman, R. (2012) Smart Textiles for Protection, Woodhead Publishing Series in Textiles.

Suggested Readings

- Horrocks, A. R. and Anand, S. C. (2015) Handbook of Technical Textiles, second edition, volume 1: technical textile processes, The Textile Institute, Woodhead Publishing.
- Horrocks, A. R. and Anand, S. C. (2016) Handbook of Technical Textiles, second edition, volume 2: technical textile applications, The Textile Institute, Woodhead Publishing.
- Langenhove, L.V. (2007) Smart Textiles for Medicine and Healthcare: Materials, Systems and Applications, Woodhead Publishing Series in Textiles, 1st Edition.
- Tao, X. (2001) Smart Fibres, Fabrics and Clothing: Fundamentals and Applications, Woodhead Publishing Series in Textiles.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
PSYCHOLOGY OF FASHION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Psychology of Fashion	4	3	1	0	As per admission criteria	Nil

Learning Objectives

- Understand foundational psychological theories related to dress and appearance.
- Analyse how clothing influences cognition, emotions, and social interactions.
- Evaluate psychological drivers of fashion consumption.
- Examine ethical and digital fashion behaviour through psychological frameworks.
- Apply psychological insights to fashion design, branding, merchandising, and consumer experience.

Learning Outcomes

The students would be able to:

- Explain major psychological theories related to dress and appearance.
- Analyse how identity, personality, culture, and society shape fashion choices.
- Evaluate consumer motivations behind buying, adopting, and rejecting fashion.
- Apply psychological principles to fashion marketing, branding, and sustainability.
- Interpret clothing as a tool for personal expression, communication, and behaviour change.

THEORY

(Credits 3; Hours 45)

UNIT I: Foundation of Fashion Psychology **13 Hours**

This unit will introduce the various functions clothes serve. The unit will focus on various psychological theories that play an important part in clothing choices

- Functions of clothing and fashion
  - Material functions (Protection, modesty and concealment, immodesty and attraction)

- Cultural functions (Communication, individualistic expression, social worth or status, definition of social role, economic worth or status, political symbol, religious and social ritual, recreation etc.)

- Core Psychological Theories
  - Self-concept and identity
  - Social comparison theory
  - Goffman's impression management
  - Clothing and body image
  - Appearance management and self-esteem

UNIT II: Consumer Psychology and fashion adoption **10 Hours**

This unit introduces key factors that govern consumers towards fashion adoption. The unit also highlights how the knowledge of consumer psychology is used for marketing of clothes.

- Motivation, perception, learning & attitudes in fashion consumption
- Fashion adoption & diffusion of innovations
- Hedonic vs utilitarian consumption
- Advertising psychology: persuasion, imagery, symbolism
- Digital fashion psychology (social media, influencers)
- Luxury consumption psychology
- Impulse buying & compulsive buying

UNIT III: Applied Fashion Psychology **12 Hours**

This unit focuses on analyzing consumer behavior within social and cultural psychological frameworks.

- Fashion therapy & clothing for mental well-being
- Psychological barriers to sustainable fashion
- Cognitive dissonance & ethical decision-making
- Behaviour change models (TPB, nudging, habits)
- Anti-fashion, minimalism, slow fashion
- Fashion for special needs populations (e.g., inclusive design)

UNIT IV: Virtual Dressing and Digital Fashion Psychology **10 Hours**

This unit examine digital fashion behaviour through psychological frameworks. Dress and body through virtual view and virtual fit.

- Dress and perception of virtual 3D self-images: comfort with body scanning
- Imaginary self in virtual world
- Virtual try-on influencing purchase decisions.
- AI-driven styling and psychological profiling.

TUTORIAL
(Credits 1; 15 Hours)

1. Class Discussion: "Why do people dress the way they do?" (Using real examples from campus/industry)
2. Mini Case Analysis:
   a. Analyse clothing choices of a public figure using theory of symbolic interactionism.
   b. Analyse why luxury consumers pay the "premium" using psychological theories.
3. Activity – Clothing Diary: Students document their outfits for 5 days and note psychological motives each day.
4. Short Reflection: Write 300 words on how a specific clothing item affects your confidence (enclothed cognition).
5. Group Presentation: Present "Functions of Clothing in Different Cultures."
6. Brand Psychology Audit: Analyse a fashion brand's personality and emotional appeal.
7. Sustainability Dissonance Task: Reflect on a time one bought something unsustainable—identify psychological conflict.
8. Slow Fashion Diary: Track clothing usage for 10 days to study personal consumption.
9. Virtual Fashion Avatar Activity: Students design digital avatars and analyse psychological choices behind features.
10. Students experience two contrasting avatar appearances (professional vs. casual, bold vs. minimal). They write a short reflection on how their behaviour or confidence changed.
11. AI Stylist Activity: Students test an AI-based styling tool and evaluate how personalization influences feelings of identity validation or enhancement.

Essential Readings

UNIT I

This unit introduces psychological, social, and cultural functions of clothing, focusing on identity, self-concept, body image, and impression management.

- Kaiser, S. B. (2012). Fashion and cultural studies (2nd ed.). Bloomsbury Academic.
- Barnard, M. (2014). Fashion theory: An introduction (2nd ed.). Routledge.
- Banerjee, S. (2018). Psychology of fashion. PHI Learning, India.
- Mukherjee, A. (2020). Clothing, identity and social meaning in India. Indian Journal of Social Psychology, 31(2), 145–158.

UNIT II

This unit focuses on consumer motivation, perception, fashion adoption, diffusion of trends, advertising psychology, digital influence, and luxury consumption.

- Solomon, M. R. (2018). Consumer behaviour: Buying, having, and being (12th ed.). Pearson Education.
- Rogers, E. M. (2003). Diffusion of innovations (5th ed.). Free Press.

- Easey, M. (2009). Fashion marketing (3rd ed.). Wiley-Blackwell.
- Schiffman, L. G., & Wisenblit, J. (2019). Consumer behaviour (12th ed.). Pearson.
- Batra, R., & Kazmi, S. H. H. (2019). Consumer behaviour (3rd ed.). Excel Books, New Delhi.
- Jain, S., & Pant, S. (2021). Digital fashion consumption among Indian youth. Journal of Fashion Marketing and Management, 25(3), 465–480.

UNIT III

This unit applies psychological theories to fashion for mental well-being, sustainability, ethical decision-making, behaviour change, and inclusive design.

- Fletcher, K. (2014). Sustainable fashion and textiles: Design journeys (2nd ed.). Routledge.
- Gwilt, A. (2020). A practical guide to sustainable fashion. Bloomsbury Visual Arts.
- Joy, A., Sherry, J. F., Venkatesh, A., Wang, J., & Chan, R. (2012). Fashion Theory, 16(3), 273–295.
- Desai, R., & Shukla, P. (2019). Fashion and sustainability in India. Bloomsbury India.
- Narang, R. (2020). Sustainable fashion behaviour in India. Journal of Textile and Apparel Studies, 4(1), 22–30.
- Kawamura, Y. (2016). Doing research in fashion and dress. Bloomsbury Academic.

UNIT IV

This unit explores psychological responses to virtual fashion, digital self-image, virtual try-on, AI-driven styling, and technology-mediated fashion behaviour.

- Kim, J., & Forsythe, S. (2008). Adoption of virtual try-on technology. Journal of Interactive Marketing, 22(2), 45–59.
- Choi, T. M. (2020). Artificial intelligence and big data analytics for fashion industry. Springer.
- Pine, B. J., & Gilmore, J. H. (2011). The experience economy. Harvard Business Review Press.
- McKinsey & Company. (2022). The state of fashion: Technology and digital transformation.
- Narkhede, B. E., & Bhattacharya, S. (2021). Digital fashion retail transformation in India. International Journal of Fashion Design, Technology and Education, 14(3), 385–395.

Suggested Readings

- Almond, K. (2017). *Basics Fashion Design: Draping*. Bloomsbury Publishing.
- Kim, J. H., & Lennon, S. (2013). “Emotional and Cognitive Reactions in Online Shopping.” *Psychology & Marketing*.
- McCracken, G. (1986). "Culture and Consumption." *Journal of Consumer Research*.

- Vigneron, F., & Johnson, L. (2004). “Luxury Brand Consumption Behavior.” *Journal of Brand Management*.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

HISTORY OF FASHION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
History of Fashion	4	3	1	0	As per admission criteria	Nil

Learning Objectives

- To study the development of costume from ancient times to the 20th century, considering socio-cultural and technological changes.
- To create awareness and understanding of the styles and special features in costume through the ages.

Learning Outcomes

The students would be able to:

- Trace the evolution of western costume.
- Identify different styles and special features in costume through the ages.
- Draw inspiration from the long-established styles for designing.

THEORY
(Credits 3; Hours 45)

UNIT I: Importance of World Textiles and Costumes in Historical Perspective. 6 Hours

This unit outlines the historical perspective of the origin of textiles and costumes.

- Sources of information for historic costumes
  - Archaeological excavations and discoveries
  - Ancient literature, chronicles and archival records
  - Museums and art galleries
  - Sculpture and pottery
- The origin of costume
- Costume through the ages- inspiration for designing and styling

UNIT II: Costumes in Early Civilizations **10 Hours**

This unit focuses on the origin and evolution of Costumes in ancient civilizations (300BC-300 AD)

- Mesopotamia
- Egypt
- Greece
- Rome
- India

UNIT III: Costumes in the Middle Ages **13 Hours**

This unit aims to explore the advancements in textiles and costumes during the Middle Ages.

- The Feudal ages (1100 AD- 1300AD)
- The late Middle Ages (1300AD-1500AD)
- Renaissance: Italy, France, England (15th-16th century)
- India: Mughal period

UNIT IV: Costumes in 17th to 20th century **16 Hours**

This unit highlights the changes and developments in European costumes through different eras from 17th to 20th century reflecting social milieu and technological advancements.

- Baroque and Rococo periods – France and England
- French Revolution and thereafter (1790AD-1900AD)
- The Directoire and Empire period (1790AD-1820AD)
- The Romantic period (1820A.D-1850AD)
- The Crinoline period (1850 AD-1869AD)
- The Bustle period (1870 AD- 1900 AD)
- Early Twentieth Century

TUTORIAL

(Credit 1; Hours 15)

- To make a report or presentation on any two design collections of eminent designers inspired by historic costumes.
- To showcase costumes styles of the ancient civilizations through draping technique.
- To discuss and design garments and accessoies inspired from any one ancient civilization
- To make a presentation on any one prominent component of a period costume with reference to raw material, construction, embellishments/styling, use etc.
- Case study of a historical figure (E.g. Cleopatra, Queen Elizabeth I, Emperor Akbar,

Napoleon, Louis XIV etc.) for analyzing their costumes with reference to textile materials and colours used, styling of garments, silhouette, accessories etc.

- To make a Presentation on highlighting development in textiles and costumes during 17th to early 20th century with respect to the influence of socio-cultural, technological factors on styling of costumes.

Essential Readings

UNIT I

This unit highlights the historical perspective of the origin of textiles and costumes. It covers the study of various sources of information on the history of costumes and fashion. It further elaborates on the evolution of costume styles through the ages.

- Black, J. A. and Garland M. (1978) A History of Fashion, London: Orbis Publishing Ltd. (Chapter 1)
- Tortora, P. G., & Marcketti, S. B. (2021). Survey of historic costume: A history of Western dress (7th ed.). Fairchild Books. (Chapter 1)
- Cole, D. J., & Deihl, N. (2015). The history of modern fashion: From 1850. Laurence King Publishing.

UNIT II

This unit covers the details of costumes prevalent in the ancient civilisations, from 300 BCE to 300 AD. The costumes and fashion prevalent in the Mesopotamian, Egyptian, Greek, Roamn and Indian Civilisations are discussed in details.

- Alkazi, R. (1983) Ancient Indian Costume, Art Heritage Books.
- Black, J. A. and Garland M. (1978) A History of Fashion, London: Orbis Publishing Ltd. (Chapter 2 - 6)
- Singh, M. (2017). Traditional Indian costumes and textiles. National Institute of Fashion Technology (Chapter 1-5)
- Tortora, P. G., & Marcketti, S. B. (2021). Survey of historic costume: A history of Western dress (7th ed.). Fairchild Books. (Chapter 2 & 3)

UNIT III

This unit elaborates on the developments in fashion during the Middle Ages across the feudal ages, late Middle Ages, Renaissance period and the Mughal period.

- Black, J. A. and Garland M. (1978) A History of Fashion, London: Orbis Publishing Ltd. (Chapter 7 - 12)
- Tortora, P. G., & Marcketti, S. B. (2021). Survey of historic costume: A history of Western dress (7th ed.). Fairchild Books. (Chapter 4 - 6)
- Singh, M. (2017). Traditional Indian costumes and textiles. National Institute of Fashion

Technology (Chapter 9)
- Kumar, R. (2010). Costumes and textiles of royal India. Christie's Books.

UNIT IV

This unit highlights the changes and developments in European fashion through different eras from 17th to 20th century discussing with reference to social milieu and technological advancements.

- Black, J. A. and Garland M. (1978) A History of Fashion, London: Orbis Publishing Ltd. (Chapter 13- 21)
- Cole, D. J., & Deihl, N. (2015). The history of modern fashion: From 1850. Laurence King Publishing.
- Tortora, P. G., & Marcketti, S. B. (2021). Survey of historic costume: A history of Western dress (7th ed.). Fairchild Books. (Chapter 7 - 12)

Suggested Readings

- Breward, C., Lemire, B., & Riello, G. (Eds.). (2023). The Cambridge Global History of Fashion, Volume 1: From antiquity to the 1800s. Cambridge University Press.
- Cumming, V. (2004) Understanding Fashion History, London: Batsford.
- Evans, C., & Nguyen, E. (Eds.). (2023). Fashion history: A global view (2nd ed.). Bloomsbury.
- Lester, K.M. (1956) Historic Costume, llinois: Chas A Bennett Co. Inc.
- Peacock, J. (2007) The Chronicle of Western Costume, Thames and Hudson.

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

Annexure-10

UNIVERSITY OF DELHI

Department of Home Science

Faculty of Science

I Year MSc. Resource Management and Design Application Department of Home Science University of Delhi

Course Credit Structure -NEP 2026

The department of home science offers master's programme in Resource Management & Design Application. This master's programme strives at empowerment through knowledge and skills towards management of personal, family, community and shared resources for creation of sensitive, aesthetic and sustainable environment. The programme strives to build a cadre of professionals in the area of sustainable management of resources and new product development. The courses are pitched at providing a strong theoretical base along with skill enhancement through hands-on training. The curriculum provides experiential training to students for professional and career readiness which enables students to participate in real life projects and develop the right skill set needed in a competitive market scenario.

Programme Specific Objectives:

- To build a cadre of professionals in the area of sustainable management of resources and new product development.
- To provide a strong theoretical base along with skill enhancement through hands-on training.
- To provide experiential training to students for professional and career readiness which enables students to participate in real life projects and develop the right skill set needed in a competitive market scenario.
- To train students to work in the areas of research, consultancy, programme, design, management and evaluation in various research and social development organizations

Programme Specific Outcomes:

- Professional and career readiness through participation in real life projects and develop the right skill set needed in a competitive market scenario.
- Enhanced entrepreneurial spirit through sounder management of facilities, marketing, finance and project management.
- Proficiency in various computer aided softwares along with design simulation thus giving a professional edge.
- Expertise in designing space and products using ergonomic, sustainable, economically and socio-culturally viable solutions with focus on life-cycle assessment approach.
- Proficiency in policies, practices and technologies for sustainable use of resources integrated with various dimensions and frameworks of environment management.

Course Credit Scheme M.Sc. Resource Management and Design Application

Programme Structure-1: (PG with only Research)

Semester	Core Courses		Elective Course		Research Methodology		Research/ Project		Total Credits
	No. of courses	**Total credits**	No. of courses	**Total credits**	No. of courses	**Total credits**	No. of courses	**Total credits**	
I	1	4	1	4	2	4	1	10	22
II	-	-	1	4	1	2	1	16	22
Total Credits for the course	4		8		6		26		44

List of Courses to be offered to students opting for Structure-1 of M.Sc. in 1st and 2nd Semester of one year course							
Type of Course	**Type**	**Semester**	**Name of the Courses**	**Credits in each course**			
				Lecture	**Tutorial**	**Practical**	**Total**
Semester – I							
Discipline Specific Core Course	DSC 1	I	Sustainable Resource Management and Design Application	3	0	1	4
Discipline Specific Elective Course	DSE 1	I	From the Pool of DSEs given below[#] i. Statistics & Data Management ii. Advanced Capacity Building for Sustainability iii. Advanced Spatial Planning Systems iv. Climate Change, Ecosystem, & Societies: Issues & Concerns v. Design Strategies & Audit vi. Health & Safety in Built Environment vii. Social Design Methods & Research viii. Inclusive Design Systems ix. Corporate Social Responsibility & Sustainability Reporting	As per the specific course			4

Advanced Research Methodology	ARM 1	I	Advanced Research Methodology	2	0	0	2
Tools for Research	TR 1	I	Tools for Research	2	0	0	2
Dissertation Project/ Entrepreneurship	IP 1	I	Dissertation/Academic project/ Entrepreneurship	0	0	10	10
Semester-II							
Discipline Specific Elective Course	DSE 2	II	x. Energy Policy, Systems and Sustainability xi. Ergonomics & Occupational Safety Management xii. Policies and Technologies for Waste Management xiii. Professional Design Methods & Start-ups xiv. Integrating Sustainable Development in Practice xv. Design Processes in Built Spaces	As per the specific course			4
Techniques of Research Writing	TRW 1	II	Techniques of Research Writing	As per the specific course			2
Dissertation Project/ Entrepreneurship	IP 2	II	Dissertation/Academic project/ Entrepreneurship	0	0	16	16
Pool of Discipline Specific Elective Courses to be offered in the 1st semester#	i. Statistics & Data Management						
	ii. Advanced capacity Building for Sustainability						
	iii. Advanced Spatial Planning Systems						
	iv. Climate Change, Ecosystem, & Societies: Issues & Concerns						
	v. Design Strategies & Audit						
	vi. Health & Safety in Built Environment						
	vii. Social Design Methods & Research						
	viii. Inclusive Design Systems						
	ix. Corporate Social Responsibility & Sustainability Reporting						
Pool of Discipline Specific Elective Courses to be offered in the 2nd Semester##	x. Energy Policy, Systems and Sustainability						
	xi. Ergonomics & Occupational Safety Management						
	xii. Policies and Technologies for Waste Management						
	xiii. Professional Design Methods & Start-ups						
	xiv. Integrating Sustainable Development in Practice						
	xv. Design Processes in Built Spaces						

SEMESTER I

DISCIPLINE SPECIFIC CORE COURSE

SUSTAINABLE RESOURCE MANAGEMENT AND DESIGN APPLICATION

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Sustainable Resource Management and Design Application	**4**	**3**	**0**	**1**	**As per admission norms**	**Nil**

Learning Objectives

- To develop an understanding of the status, challenges, and governance of key natural resources in India.
- To critically examine policies, practices, and gaps in resource management systems.
- To introduce sustainable solutions and strategies for improving resource efficiency.
- To apply design approaches for addressing environmental and resource-related challenges.
- To build capacity for developing innovative, context-specific, and scalable design interventions.

Learning Outcomes

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

- Analyse the current status and challenges related to water, energy, air, noise, and waste in India.
- Evaluate existing policies and identify implementation gaps.
- Propose sustainable and resource-efficient strategies for different contexts.
- Apply design approaches to environmental problems.
- Develop and present design-based solutions for real-world resource management

issues.

- Integrate sustainability principles into planning, design, and decision-making processes.

THEORY

(Credits 3; Hours 45)

UNIT I: Resource Systems in India – Status, Policies, Practices, and Gaps 11 Hours

This unit introduces the status, policies, practices, and gaps in India's resource systems, including climate change and sustainability challenges.

- Overview of water, energy, air, noise, and waste systems in India
- Current status and sectoral challenges
- National policies, acts, and regulatory frameworks
- Institutional mechanisms and existing practices
- Gaps, concerns, and implementation challenges
- Climate change linkages and sustainability concerns

UNIT II: Sustainable Solutions and Resource Efficiency Strategies in India 12 Hours

This unit delves into sustainable solutions and resource-efficient strategies in India across water, energy, air, noise, and waste management.

- Principles of sustainability and circular economy
- Water efficiency: rainwater harvesting, wastewater reuse
- Energy solutions: renewables and efficiency
- Air and noise management strategies
- Waste management: 3R, circular systems, decentralized approaches
- Case studies and community-based models

UNIT III: Design Concepts for Sustainable Resource Management 11 Hours

This unit provides design thinking, participatory methods, and eco-friendly strategies for sustainable resource management.

- Design thinking and systems thinking approaches
- Human-centered and participatory design
- Eco-design and life cycle thinking
- Resource-sensitive design (water, energy, waste)

- Tools: ideation, prototyping, stakeholder mapping
- Integration of traditional and modern practices

UNIT IV: Design Applications in Resource Management 11 Hours

This unit covers design applications, field problem-solving, prototypes, project-based learning, evaluation, and documentation for sustainable resource management.

- Application of design in water, energy, air, noise, and waste systems
- Field-based problem identification
- Development of prototypes/models
- Project-based learning and interdisciplinary approaches
- Evaluation: feasibility, scalability, sustainability impact
- Documentation and presentation

PRACTICAL

(Credits 1; Hours 30)

1. Resource Assessment of Household/Institutional audit: Water usage assessment, Energy consumption analysis, Solid waste audit (segregation, quantification, characterisation), Basic air and noise level observation (using secondary data/tools if available)
2. Situational Analysis of Water treatment plant / Rainwater harvesting site, Waste management facility / Composting unit, green building / Energy-efficient campus. Field observation, documentation, and reporting.
3. Design Thinking solutions: Problem identification (based on field/context), Stakeholder mapping, Ideation through brainstorming, mind mapping etc. and concept development for sustainable interventions.
4. Indigenous and low-cost prototype development of Rainwater harvesting model, Waste segregation system, Energy-efficient space design. Testing and refinement of ideas
5. Project presentation of design solution and report writing

Essential Readings

UNIT I:

This unit introduces Resource Systems in India – Status, Policies, Practices, and Gaps

- Centre for Science and Environment. (2024). State of India's Environment 2024. CSE.

- NITI Aayog. (2023). SDG India index and dashboard 2023–24. Government of India.
- Ministry of Environment, Forest and Climate Change. (2022). India: Third biennial update report to the UNFCCC. Government of India.
- TERI. (2023). TERI energy & environment data diary and yearbook 2023. TERI Press.

UNIT II:

This unit focuses on Sustainable Solutions and Resource Efficiency Strategies in India

- Bureau of Energy Efficiency. (2022). Energy efficiency in India: Policies and programmes. Government of India.
- Ministry of Housing and Urban Affairs. (2023). Swachh Bharat Mission (Urban): Compendium of best practices. Government of India.
- NITI Aayog. (2022). Circular economy in India: A handbook for policymakers. Government of India.
- TERI. (2022). Water resource management in India: Challenges and solutions. TERI.

UNIT III:

This unit covers Design Concepts for Sustainable Resource Management

- Ministry of Education. (2023). Indian knowledge systems: A framework for higher education. Government of India.
- Gupta, A. K. (2022). Grassroots innovation and inclusive development. National Innovation Foundation.

UNIT IV:

This unit provides Design Applications in Resource Management

- NITI Aayog. (2023). SDG India index and thematic reports. Government of India.
- Indian Institute of Corporate Affairs. (2022). Impact assessment of development projects in India. IICA.
- Smart Cities Mission. (2023). Compendium of best practices. Government of India.
- Jain, S., & Agrawal, P. (2023). Sustainable resource management: Concepts and practices in India. McGraw Hill India.
- Bansal, S. (2022). Design for sustainability: Indian perspectives and applications. Bloomsbury India.
- Singh, K. (2023). Natural resource management and livelihood security in India. Springer India

Suggested Readings

- Ellen MacArthur Foundation. (2022). Towards a circular economy: Business rationale for an accelerated transition. Ellen MacArthur Foundation.
- United Nations Environment Programme. (2023). Global environment outlook – GEO-6:

Healthy planet, healthy people. UNEP.

- NITI Aayog, & United Nations Development Programme. (2023). SDG India index and thematic reports. Government of India.
- World Bank. (2022). Unlocking India's urban potential: Sustainable and resilient cities. World Bank Publications.
- Kibert, C. J. (2022). Sustainable construction: Green building design and delivery (4th ed.). John Wiley & Sons.
- Lehmann, S. (2022). Urban regeneration: A manifesto for transforming cities. Palgrave Macmillan.
- Raworth, K. (2022). Doughnut economics: Seven ways to think like a 21st-century economist (Updated ed.). Chelsea Green Publishing.
- Papanek, V. (2023). Design for the real world: Human ecology and social change (Revised ed.). Thames & Hudson.
- Journal readings
- Bansal, S., & Kumar, P. (2022). Environmental sustainability challenges in India. Indian Journal of Environmental Protection, 42(3), 215–224.
- Singh, A., & Kumar, S. (2023). Air pollution and governance challenges in India. Economic and Political Weekly, 58(14), 45–52.
- Ghosh, S., & Rajan, S. (2022). Circular economy and sustainable resource use in India. Resources, Conservation and Recycling, 181, 106247.
- Kumar, R., & Agrawal, A. (2023). Decentralized waste management practices in urban India. Journal of Material Cycles and Waste Management, 25(2), 678–690.
- Bhaduri, S., & Kumar, H. (2022). Design thinking for social innovation in India. Journal of Innovation and Entrepreneurship, 11(1), 1–15.
- Sinha, R., & Mishra, S. (2023). Indigenous knowledge systems and sustainability practices in India. Indian Journal of Traditional Knowledge, 22(1), 45–53.
- Chakrabarti, A. (2023). Design for sustainability: Indian perspectives. Design Journal (India), 18(1), 25–39.
- Narayan, S., & Singh, J. (2023). Green entrepreneurship and sustainable livelihoods in India. Journal of Cleaner Production, 385, 135678.
- Mehta, S., & Shah, R. (2023). Monitoring and evaluation of sustainability programs in India. Evaluation and Program Planning, 96, 102189.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
STATISTICS & DATA MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Statistics and Data Management	4	3	0	1	As per admission norms	Nil

Learning Objectives

- To develop understanding of fundamental and advanced statistical concepts used in research and data analysis.
- To enable students to apply descriptive and inferential statistics for real-world decision-making.
- To strengthen ability to formulate hypotheses, select appropriate statistical tests, and interpret outputs.
- To prepare students for quantitative research, industry analytics, and academic data projects.
- To train students in using Excel and SPSS for data handling, visualization, and interpretation.

Learning Outcomes

The students would be able to:

- Explain key concepts in descriptive and inferential statistics.
- Organize, clean, and summarize datasets using appropriate statistical tools.
- Apply probability distributions, correlation, regression, and hypothesis testing.
- Use Excel and SPSS for data visualization, statistical testing, and reporting.
- Interpret statistical outputs and draw valid conclusions for research decisions.
- Design and execute quantitative data analysis workflows independently.

THEORY

(Credits 3; Hours 45)

UNIT I: Introduction and descriptive Statistics 12 Hours

This unit will introduce the foundations of statistics and techniques for summarizing and describing data.

- Definition, scope, and applications of statistics
- Types of data: qualitative and quantitative
- Scales of measurement
- Classification & tabulation of data
- Graphical and visual representations
- Measures of central tendency: mean, median, mode
- Measures of dispersion: range, variance, standard deviation, coefficient of variation
- Skewness and kurtosis: meaning and interpretation

UNIT II: Probability and Probability Distributions 10 Hours

This unit explores probability concepts and major statistical distributions.

- Basic probability concepts: Addition & multiplication theorems
- Random variables: discrete and continuous
- Binomial and Normal distributions
- Sampling theory & sampling distributions
- Central Limit Theorem

UNIT III: Correlation and regression 8 Hours

This unit focuses on analysing relationships between variables.

- Correlation: Pearson and Spearman correlation
- Simple linear regression: model, estimation, interpretation
- Multiple linear regression: assumptions, multicollinearity, model building

UNIT IV: Hypothesis Testing and Non-Parametric Methods 15 Hours

This unit introduces hypothesis testing frameworks and non-parametric alternatives for non-normal data.

- Concept of hypothesis: null & alternative
- Types of errors, significance levels, p-value
- Parametric tests:
    - z-test
    - t-test (one sample, independent, paired)

    - Chi-square test
- Non-parametric tests:
    - Mann–Whitney U test
    - Wilcoxon signed-rank test
    - Kruskal–Wallis test
- Interpretation and reporting of statistical results
- Research Conclusion and recommendation

PRACTICAL

(Credits 1; 30 hours)

1. Data Entry, Coding & Cleaning: Importing data, handling missing values, variable labels, Excel formulas.
2. Descriptive Statistics & Visualization: Mean, Standard Deviation, frequency tables, histograms, boxplots (Excel + SPSS).
3. Cross-Tabulation & Chi-Square Test: PivotTables in Excel; Crosstabs in SPSS.
4. Correlation Analysis: Pearson & Spearman correlations; scatterplots.
5. Simple Linear Regression: Trendline in Excel; Regression output in SPSS.
6. Multiple Regression: Model summary, coefficients, interpretation using SPSS.
7. t-Tests: Independent, paired, and one-sample t-tests in SPSS.
8. ANOVA (One-way & Two-way): Running ANOVA and post-hoc analysis.
9. Non-Parametric Tests: Mann-Whitney, Wilcoxon, Kruskal–Wallis in SPSS.
10. Report Generation & Interpretation
11. Preparing APA-style tables, graphs, and interpretations in Excel/SPSS.

Essential Readings:

UNIT I

This unit describes the foundations of statistics and techniques for summarizing and describing data.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.). Pearson Prentice Hall.
- Bernard, H. R. (2000). *Social research methods: Qualitative and quantitative approaches*. Sage.
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.). CreateSpace Independent Publishing Platform.
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*. Wiley.

UNIT II

This unit deals with the probability concepts, rules of probability, discrete and continuous distributions (Binomial, Poisson, Normal).

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education.*

UNIT III

This unit focuses on relationship between variables, correlation coefficients, simple and multiple regression, regression assumptions.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Muijs, D. (2004). *Doing quantitative research in education with SPSS*. Sage.

UNIT IV

The unit deals with statistical inference such as t-tests, ANOVA, Chi-square, non-parametric tests (Mann-Whitney, Wilcoxon, Kruskal-Wallis), decision making.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education.*
- Muijs, D. (2004). *Doing quantitative research in education with SPSS*.

Suggested Readings

- Field, A. (2025). *Discovering Statistics Using IBM SPSS Statistics* (6th ed.). Sage.
- Kalyanaraman, K., Ramanathan, H. N., & Harikumar, P. N. (2025). *Statistical Methods for Research: A Step-by-Step Approach Using IBM SPSS*. Atlantic Publishers.
- Healey, J. F., & Donoghue, C. (2021). *Statistics: A Tool for Social Research and Data Analysis* (11th ed.).

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
ADVANCED CAPACITY BUILDING FOR SUSTAINABILITY

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Advanced Capacity Building for Sustainability	**4**	**3**	**0**	**1**	**As per admission norms**	**Nil**

Learning Objectives

- To develop an advanced understanding of sustainability and capacity-building frameworks
- To equip students with tools for community-based and institutional capacity development
- To integrate design thinking, innovation, and Indian Knowledge Systems (IKS)
- To build competencies in evaluation, entrepreneurship, and sustainability leadership

Learning Outcomes

After completing the course, students will be able to:

- Critically evaluate sustainability challenges and capacity gaps
- Apply global and local frameworks for capacity building
- Design participatory interventions for communities
- Integrate indigenous knowledge with modern sustainability practices
- Conduct monitoring and evaluation of sustainability programs

THEORY

(Credits 3; Hours 45)

UNIT I: Foundations of Sustainability & Capacity Building **12 Hours**

This unit covers sustainability dimensions, capacity building, and resilience to address global challenges and achieve the Sustainable Development Goals.

- Concepts and dimensions of sustainability (Environmental, Social, Economic)
- Evolution of capacity building and development
- Systems thinking, resilience, and adaptive capacity
- Global sustainability challenges and SDGs

UNIT II: Frameworks and Approaches **11 Hours**

This unit highlights capacity-building frameworks, participatory approaches, and governance for effective policy planning.

- UNDP Capacity Development Framework
- OECD frameworks for policy capacity
- Theory of Change and Logical Framework Approach (LFA)
- Participatory approaches: PRA, PLA
- Role of governance and institutions

UNIT III: Community, Design & Indigenous Knowledge System **11 Hours**

This unit delves into inclusive community engagement, indigenous knowledge systems, design thinking, and AI-driven capacity-building solutions.

- Gender, equity, and inclusivity
- Community mobilization and stakeholder engagement
- Indian Knowledge Systems (IKS) and traditional ecological knowledge
- Design thinking and human-centered innovation
- AI in capacity building design solutions

UNIT IV: Monitoring, Evaluation & Sustainable Transitions **11 Hours**

This unit provides circular economy, sustainable livelihoods, monitoring and evaluation tools, and data-driven decision-making for sustainable transitions.

- Circular economy and green ventures
- Skill development for sustainable livelihoods
- Monitoring tools: SDG indicators, sustainability metrics
- Impact assessment and participatory evaluation
- Data-driven decision-making

PRACTICAL

(Credit 1; Hours: 30)

1. Identify a community/institution and assess capacity gaps
2. Participatory Tools Application: PRA tools (mapping, ranking, seasonal calendars)
3. AI in Capacity Building Design: Implementation of AI tools for designing capacity building
4. Design a sustainability intervention using design thinking solutions
5. Impact Assessment: Develop indicators and evaluate outcomes of a selected program

Essential Readings:

UNIT I:
This unit introduces foundations of sustainability & capacity building

- Khosla, R. (2022). India's green transformation: Pathways to sustainable development. Oxford University Press.
- Nayak, P., & Panda, B. (2023). Sustainability and development in India: Challenges and strategies. Routledge India.
- Gupta, A. (2022). Environmental governance and sustainable development in India. Springer India.

UNIT II:
This unit covers frameworks and approaches

- Dubash, N. K. (2022). India in a warming world: Integrating climate change and development. Oxford University Press.
- Mehrotra, S. (2023). Governance and development in India: Sustainability perspectives. Cambridge University Press India.
- Sharma, A., & Singh, R. (2022). Environmental policy and governance in India. Sage Publications India.

UNIT III:
This unit focuses on community, design & indigenous knowledge systems

- Chambers, R., & Shah, M. (2022). Participatory rural development in India: Approaches and applications. Orient Blackswan.
- Tiwari, P., & Joshi, R. (2023). Community-based natural resource management in India. Springer India.

- Desai, V., & Potter, R. B. (Indian edition contributors) (2022). The companion to development studies (Indian perspective updates). Routledge India.

UNIT IV: Monitoring, Evaluation & Sustainable Transitions

- Kumar, V., & Rai, S. (2023). Sustainable entrepreneurship in India: Opportunities and challenges. Sage India.
- Nair, S. (2022). Innovation for sustainability: Indian case studies. Routledge India.
- Ministry of Education, Government of India. (2023). Indian knowledge systems for sustainable living. Government of India Publications.

Suggested Readings

- Leal Filho, W., Azul, A. M., Brandli, L., Lange Salvia, A., & Wall, T. (Eds.). (2022). Handbook of sustainability science and research. Springer.
- Organisation for Economic Co-operation and Development (OECD). (2022). Building capacity for evidence-informed policy making. OECD Publishing.
- Sachs, J. D., Kroll, C., Lafortune, G., Fuller, G., & Woelm, F. (2023). Sustainable development report 2023. Cambridge University Press.
- United Nations Development Programme (UNDP). (2022). Capacity development: A UNDP primer. UNDP.
- United Nations Educational, Scientific and Cultural Organization (UNESCO). (2023). Education for sustainable development: A roadmap. UNESCO.
- Raworth, K. (2022). Doughnut economics: Seven ways to think like a 21st-century economist. Chelsea Green Publishing.
- Ellen MacArthur Foundation. (2023). Circular economy introduction. EMF Publishing.
- Government of India, NITI Aayog. (2023). SDG India index and dashboard report. NITI Aayog.

Journal Articles

- Bansal, S., & Kumar, P. (2022). Sustainable development in India: Progress, challenges, and way forward. Indian Journal of Environmental Protection, 42(3), 215–224.
- Sharma, R., & Bansal, M. (2023). Capacity building for sustainable development: Evidence from Indian states. Journal of Rural Development, 42(2), 161–178.
- Singh, A., & Kumar, S. (2023). Systems thinking approach to sustainability transitions in India. Economic and Political Weekly, 58(14), 45–52.

- Tiwari, R., & Pandey, S. (2022). Governance and institutional capacity building in India: A critical analysis. Indian Journal of Public Administration, 68(4), 589–604.
- Agarwal, B. (2023). Revisiting participatory approaches in natural resource management in India. Ecological Economics, 203, 107–610.
- Sinha, R., & Mishra, S. (2023). Indigenous knowledge systems and sustainability: Evidence from rural India. Indian Journal of Traditional Knowledge, 22(1), 45–53.
- Dwivedi, Y. K., et al. (2023). Artificial intelligence (AI) applications in emerging economies: The Indian context. International Journal of Information Management, 70, 102–115.
- Ghosh, S., & Rajan, S. (2022). Circular economy and sustainable business models in India. Resources, Conservation and Recycling, 181, 106–247.
- Narayan, S., & Singh, J. (2023). Green entrepreneurship and sustainable livelihoods in India. Journal of Cleaner Production, 385, 135–678.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
ADVANCED SPATIAL PLANNING SYSTEMS

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Advanced Spatial Planning systems	**4**	**2**	**0**	**2**	**As per admission norm**	**Nil**

Learning Objectives

- This course focuses on methodological and technical approaches to planning spaces and their application in building interiors.
- The students will gain information and understanding of the social, psychological, and functional contexts that influence efficient movement patterns in contemporary space structuring.

Learning Outcomes

The students would be able to:

- Understand the concept of space design and its application in building interiors.
- Enable exploration of insights for a conducive socio-economic and environmental impact.
- Give technical inputs in professional interior designing of residential and commercial spaces.

THEORY

(Credits 2; Hours 30)

UNIT I: Designing Sustainable Spaces **8 Hours**

This unit focuses on the fundamental principles of advanced spatial planning and their relationship with sustainability and heritage.

- Structuring spaces for different uses
- Social and psychological context of space design
- Design efficiency in terms of the pattern of movement and functionality
- Green building design and audit, Energy efficiency in building construction, Modular system in construction of buildings

UNIT II: Restoration and Repair of Heritage properties **6 Hours**

This unit provides an introduction to the critical field of heritage conservation, focusing specifically on the technical and theoretical aspects of restoring historic structures.

- Types of heritage structures
- Role of agencies involved in restoration of heritage properties
- Elements of restoration
- Development of architectural styles and trends in India and around the world (Focus on Indian Palaces/Forts etc);

UNIT III: Space Designing for Interior Services **8 Hours**

This unit delves into the essential technical services required within a built space.

- Lighting design for different spaces
- False Ceilings: construction techniques
- Acoustics: Types of acoustic design and materials, sound transmission, reverberation, and propagation
- Air Conditioning: duct design and layout plan
- Fire safety: Types, Evacuation plans
- Types of security services in buildings

UNIT IV: Visual Merchandising and Window Display 8 Hours

This unit introduces the art and science of Visual Merchandising (VM), focusing on its role in retail and customer engagement.

- Defining Visual Merchandising:
- Key Principles of Visual Merchandising:Color Psychology, Space Planning, Signage and Graphics, Lighting, Sensory Appeal.
- The Impact of Visual Merchandising on Customer Behavior
- Exploring and Understanding Company's Visual Design Policy
- Upselling via Window Display
- Understanding the Different Components that Contribute to Creating High Quality Window Displays
- Factors to be Considered When Creating a Professional Window Display

PRACTICAL

(Credits 2; Hours 60)

1. Conduct a survey to analyze and document the evolution of design practices, specifically focusing on how new design solutions are implemented to reflect and meet changing user needs.
2. Undertake site visits to physically examine and study various examples of existing structures and spaces, documenting different types of designs that demonstrate exceptional user-friendliness and accessibility.
3. Produce detailed presentation drawings, including floor plans, for diverse commercial and public interior spaces such as retail offices, hotel public areas, stand-alone restaurants, gymnasiums, health clubs, and sports complexes.
4. Generate comprehensive working drawings covering interior service plans, including Electrical layouts, reflected ceiling plans, wall treatment specifications for temperature control and acoustics, electrical planning details, and other furnishing and perspective drawing specifics.
5. Investigate and evaluate the concept of wash fastness in materials, which refers to a material's resistance to color loss or fading when exposed to washing.

6. Perform case studies and surveys on organizations that successfully foster creativity, innovation, and new venture creation, focusing on emerging technological and industrial trends that disrupt markets and influence business decisions.
7. Identify potential business opportunities based on emerging industry trends and subsequently develop detailed business plans outlining strategies for market entry, operation, and growth.
8. Engage in design exploration by examining different themes influenced by culture, specific occasions, and brand identity, and then create theme-based mood boards to guide the design of promotional displays.
9. Detailed plans for display areas by strategically understanding and implementing effects created by lighting schemes, mannequin grouping, color usage, and establishing effective focal points. This also includes the assessment, evaluation, and budgeting for the display area.
10. Create detailed technical designs for visual displays, using software like AutoCAD 2D and Photoshop for both 2D and 3D display concepts. This includes developing signage and graphics, designing lighting plans to create specific focal points, and carefully selecting suitable coverings, props, and merchandise.

Essential Readings

UNIT I:

This unit focuses on the fundamental principles of advanced spatial planning and their relationship with sustainability and heritage.

- Alexander, C., Ishikawa, S., & Silverstein, M. (1977). *A pattern language: Towns, buildings, construction*. Oxford University Press.
- Ching, F. D. K. (2014). *Architecture: Form, space, and order* (4th ed.). John Wiley & Sons.
- Neufert, E. (2019). *Architects' data* (5th ed.). Wiley-Blackwell.
- U.S. Green Building Council. (2013). *LEED reference guide for building design and construction* (v4).

UNIT II:

This unit provides an introduction to the critical field of heritage conservation, focusing specifically on the technical and theoretical aspects of restoring historic structures.

- Borden, D., Elzanowski, J., Lawrenz, C., & Miller, T. (2008). *Architecture: A world history*. Abrams.

- Brown, P. (2010). *Indian architecture* (Vols. 1–2). D. B. Taraporevala Sons & Co.

- Indian National Trust for Art and Cultural Heritage. (2004). *Charter for the conservation of unprotected heritage and sites in India*. INTACH.

- Marshall, J. (1923). *Conservation manual: A handbook for the use of archaeological officers and others entrusted with the care of ancient monuments*. Superintendent of Government Printing.

- Sharanappa. (2025). Role of UNESCO and ASI in the heritage conservation of India.

UNIT III:

This unit delves into the essential technical services required within a built space.

- ASHRAE. (2022). *ASHRAE design guide for duct systems*. American Society of Heating, Refrigerating and Air-Conditioning Engineers.

- Bureau of Indian Standards. (2016). *National building code of India 2016* (Vol. 1 & 2).

- Chudley, R., & Greeno, R. (2020). *Building construction handbook* (12th ed.). Routledge.

- Editors of Cool Springs Press. (2017). *Black & Decker: The complete guide to finishing walls & ceilings*. Cool Springs Press.

- Konstantzos, I., Sadeghi, S. A., Kim, M., Xiong, J., & Tzempelikos, A. (2020). The effect of lighting environment on task performance in buildings – A review. *Energy and Buildings, 226*, Article 110394. https://doi.org/10.1016/j.enbuild.2020.110394

- Templeton, D. (Ed.). (1999). *Acoustics in the built environment: Advice for city planners and architects* (2nd ed.). Architectural Press.

UNIT IV:

This unit introduces the art and science of Visual Merchandising (VM), focusing on its role in retail and customer engagement.

- Bellizzi, J. A., Crowley, A. E., & Hasty, R. W. (1983). The effects of color in store design.

Journal of Retailing, 59(1), 21–45.

- Huddleston, P., Behe, B. K., Minahan, S., & Fernandez, R. T. (2015). The effect of visual merchandising on consumer impulse buying behavior. *The International Review of Retail, Distribution and Consumer Research*, *25*(1), 69–88. https://doi.org/10.1080/09593969.2014.911199

- Pegler, M. M., & Kong, A. (2018). *Visual merchandising and display* (7th ed.). Fairchild Books.

- Underhill, P. (2009). *Why we buy: The science of shopping* (Updated and rev. ed.). Simon & Schuster.

Suggested Readings

- Kibert, C. J. (2016). *Sustainable construction: Green building design and delivery* (4th ed.). Wiley.
- Ching, F. D. K . (2014). Building Construction Illustrated, Wiley, New Jersey
- DeChiara, J., Panero, J. & Zelnik, M. (2011). Time Saver Standards for Interior Design and space planning, second edition. McGraw-Hill Education
- Goel, S., Seetharaman, P. & Kakkar, A. (2015). Manual on Interior space designing, Elite publishing house
- Shah, M. G., Kale, C. M., Building drawing, 5th edition, Tata McGraw Hill publishing, New Delhi.

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

DISCIPLINE SPECIFIC ELECTIVE

CLIMATE CHANGE, ECOSYSTEM & SOCIETY: ISSUES & CONCERNS

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Climate Change, Ecosystem & Society: Issues & Concerns	**4**	**3**	**0**	**1**	**As per admission norms**	**Nil**

Learning Objectives

- To impart knowledge about science and policy of climate change along with climate vulnerabilities on different systems
- To understand the adaptation and mitigation strategies to deal with climate change for different sectors
- To learn about the policy framework for controlling climate change

Learning Outcomes

After completing the course, students will be able to:

- Understand concept of climate change, components of climate change system, global warming-causes and consequences
- Understand vulnerabilities and impact of climate change on different systems
- Gain insight into adaptation and mitigation strategies for different sectors
- Understand policies and programs –global and national to control climate change

THEORY
(Credits 3; Hours 45)

UNIT I: Concept, components and science of climate change 11 Hours

This unit covers throws light on the history and components of climate change.

- History and evidence of climate change
- Natural and human induced causes of climate change
- Components of climate change system, Biosphere and geosphere
- Biogeochemical/Nutrient cycles
- Climate change, ecosystem and society

UNIT II: Climate Change-global-regional scenario and gender perspective 10 Hours

This unit throws light on recent issues, global scenario and gender perspective in climate change

- Recent issues in climate change (ozone hole, melting of glaciers, atmospheric brown clouds)
- Global scenario, climate resilience, natural resource management, future impacts of climate change
- Global warming- causes, consequences, greenhouse effect and greenhouse gases
- Gender perspectives on climate change

UNIT III: Vulnerabilities, adaptation and mitigation options for climate change 12 Hours

This unit focuses on impacts of climate change and vulnerable sectors along with adaptation and mitigation strategies.

- Impacts of climate change along with sectoral vulnerabilities on both natural and managed systems both present and projected on various sectors - Agriculture, forestry and bio-diversity; Human health, infrastructure, industry; Water resources, sea level rise; Extreme events
- Adaptation options for various sectors, factors affecting adaptation, strategies, constraints and consequences
- Mitigation strategies for various sectors, stabilisation scenario, mitigation options, programmes and initiatives, mitigation and sustainable development linkages
- Climate change mitigation programmes in energy and industry sector, Case studies with focus on India

- Recent issues in climate change, future impacts of climate change

UNIT IV: Policies and programs for controlling climate change 12 Hours

This unit throws light on the policy environment for climate change, both national and international.

- International efforts and policy frameworks - history, objectives, activities, equity issues, key issues in multilateral negotiations on climate change, international protocols, role and outcomes of UNFCCC, IPCC
- India's national policy framework, NAPCC-targets and achievements, PAT (Perform, Achieve, and Trade) scheme, Forest certification (FSC, SFI, PEFC)
- CO_2 sequestration, forests and other sinks in India, opportunities and concerns
- The global carbon market, Carbon Pricing, Carbon Tax, Emission reduction certificates

PRACTICAL

(Credit 1; Hours: 30)

- Climate change: causes, impacts, adaptation and mitigation strategies for different sectors – Review, analysis and creation of portfolio
- Conducting survey on assessing awareness about climate change related issues among different target groups
- Critically analyzing measures adopted by large industries to reduce their Greenhouse Gas (GHG) emissions through appraisal of mitigation and adaptation practices to climate change through industry cluster approach
- Adaptation and mitigation strategies/initiatives taken by central and state governments to tackle climate change - Analysis through policy implementation, feedback from stakeholders etc.
- Regional climate vulnerabilities and adaptation and mitigation strategies - Critical analysis with focus on different states and geographical locations
- Designing/developing and conducting need based training/awareness generation programs for different target groups towards lifestyle changes for reducing carbon footprint/climate change

Essential Readings:

UNIT I:

- Singh, A. K. (2023). *Global Warming and Climate Change : Story of India's Climate Disaster and How to Avoid it.* Chennai, India: Notion Press Media Pvt Ltd.
- Clack, T., Meral, Z., & Selisny, L. (2023). *Climate Change, Conflict and (In)Security: Hot War*. Routledge.
- IPCC. (2023). *AR6 Synthesis Report: Climate Change 2023*. IPCC.

UNIT II:

- Khare, N. (2025). *Climate Change in India: Impacts and Assessments*. CRC Press.
- Mital, M., & Gupta, P. (Eds.). (2025). *Environmental Studies: Resources and Sustainability - A Textbook and Practical Manual.* Elite Publishing.
- Ramesh, M. (2018). *The Climate Solution: India's Climate Change Crisis and What We Can Do About It.* Hachette India.

UNIT III:

- Srivastava, R. K., & Chakraborty, A. (Eds.). (2025). *Mitigation and Adaptation Strategies Against Climate Change in Natural Systems.* Springer.
- Sabel, C. F., & Victor, D. G. (2022). *Fixing the Climate: Strategies for an Uncertain World.* Princeton University Press.

UNIT IV:

- Kedia, S., Khanna, P., Raj, S., Amanuma, N., & Gupta, H. (2024). *Synergies between Climate Action and SDGs: Implications for Multilateralism*. SDG Charter, Act4Earth, and World Sustainable Development Summit. New Delhi: The Energy and Resources Institute.
- Deutscher, G. (2023). *Climate Debt: Combining The Science, Politics And Economics of Climate Change.* World Scientific Publishing Co Pte Ltd.

Suggested Readings:

- Agarwal, S.K. (2003). *Environmental Scenario for 21st Century*. New Delhi: APH.
- Hardy, J. (2003). *Climate Change: Causes, Effects and Solutions*. John Wiley & Sons.

- Kelkar, U., & Bhadwal, S. (2007). South Asian Regional Study on Climate Change Impacts and Adaptation: Implications for Human Development. Human Development Report 2007/2008. Fighting Climate Change: Human Solidarity in a Divided World. Human Development Report Office, Occasional Paper.
- Kovats, S., & Akhtar, R. (2008). Climate, climate change and human health in Asian cities. Environment and Urbanization 29 (1): 165-175.
- Pittock, B. (2009). Climate change: The science, impacts and solutions 2nd edition. CSIRO, Melbourne, and Earthscan, London.

Journal article (highly cited and relevant):

- Dubash, N. K. (2011). The politics of climate change in India: Power, interest and contested development. *IDS Bulletin*, *42*(2), 97–106.
- Singh, C., & Deshpande, T. (2016). How do we assess vulnerability to climate change in India? A systematic review of literature. *Mitigation and Adaptation Strategies for Global Change*, *21*, 1083–1106.
- Gulia, S., Goyal, S. K., Kumar, A., & C. S., P. (2021). Evolution of air pollution management policies and research gap assessment in India. *Science of The Total Environment*, *800*, 149594.

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

DISCIPLINE SPECIFIC ELECTIVE
DESIGN STRATEGIES & AUDIT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Design Strategies & Audit	**4**	**2**	**0**	**2**	**As per admission norms**	**Nil**

Learning Objectives

- Develop the ability to identify design problems and propose effective solutions for specific products or situations.
- Equip students with the skills to integrate sustainable design principles in products and services.
- Enhance analytical skills through design audits to assess the feasibility, viability, and sustainability of designs.

Learning Outcomes

After completing this course, students will be able to:

- Recognize design challenges and apply a life-cycle assessment approach to find suitable solutions.
- Assess and evaluate designs for safety, ergonomics, functionality, and sustainability through product audits.

THEORY

(Credits 2; Hours 30)

UNIT I: Product Semantics and User Experience **8 Hours**

This unit delves into product semantics, the emotional connection between users and products, and the development of a logical design approach.

- Theories of product semantics and their effect on design.
- Exploring product emotion, value, and attachment.
- Understanding product identity and its role in design.
- Usability and enhancing user experience through design.

UNIT II: Design as a Management Tool and Professional Practices 6 Hours

This unit focuses on the managerial aspects of design, including the evaluation process, team management, and professional ethics in design practices.

- Design evaluation, key designer attributes, and setting up a design office.
- Client relations, business correspondence, and managing the design process.
- Human factors in team management and design workflow.
- Legal aspects including ethics, design briefs, costing, patent registration, and fee estimation.

UNIT III: Product Interface Design 10 Hours

This unit covers designing and evaluating product interfaces with a focus on user-centered design, ergonomics, prototyping, and interaction within complex systems.

- Visual, functional, and ergonomic requirements of product interface design.
- Human factors and the importance of user-centered and participatory design.
- Scenario building, storyboarding, and prototyping for interactive design.
- Evaluating user interfaces and designing for complex system

UNIT IV: Product Analysis and Audit 6 Hours

This unit highlights analyzing products, understanding contextual applications, evaluating design guidelines, and conducting design audits.

- Product analysis- diachronic and synchronic
- Understanding and analysing contexts – parallel and future situations
- Evaluation of design guidelines
- Design audit

PRACTICAL

(Credits 2; Hours 60)

1. Product Design Audit: Conduct a critical design audit of an existing product, evaluating aesthetics, functionality, and usability.
2. Sustainability Assessment: Perform a sustainability audit on a product, analyzing materials, energy use, and environmental impact.
3. Safety Evaluation: Assess a product for safety compliance and potential hazards, proposing improvements.
4. Ergonomic Analysis: Examine a product for ergonomic efficiency and user comfort, suggesting design modifications.
5. User interface design portfolio
6. Critical evaluation of existing product
7. Finding solution to design problems
8. Sketches and design of improvised product
9. Prototyping new product based on improvised design of user-interface.
10. Working on variations or different formats of the new product

Essential Readings

UNIT I:

This unit delves into product semantics, the emotional connection between users and products, and the development of a logical design approach.

- Krippendorff, K. (2006). *The Semantic Turn: A new foundation for design*. Boca Raton, London, New York: Taylor & Francis, CRC Press.
- Norman, D.A. (2004). *Emotional Design: Why we love (or hate) everyday things*. New York, NY: Basic Books.

UNIT II:

This unit focuses on the managerial aspects of design, including the evaluation process, team management, and professional ethics in design practices.

- John, T. (2005). In the bubble: designing in a complex world
- Agarwal, U. A., Jain, K., Anantatmula, V., & Shankar, S. (2023). *Managing people in projects for high performance: Behavioural approach to productive project teams*. Springer.

UNIT III:

This unit covers designing and evaluating product interfaces with a focus on user-centered design, ergonomics, prototyping, and interaction within complex systems.

- Rangaswamy, N., Sim, G. R., & Borah, P. P. (Eds.). (2025). *Human-Computer Interaction: Design and Research* (Vols. I & II). Springer.
- Khan, M. I. (2025). *Industrial ergonomics*. PHI Learning.
- Ghosh, A. (2024). *Mastering UX design with effective prototyping*. BPB Publications.
- Gandotra, V. et al. (2013). *Essentials of Ergonomics*, Dominant Publishers: Delhi
- William, L. (2003). *Universal Principles of design*, Rockport.

UNIT IV:

This unit highlights analyzing products, understanding contextual applications, evaluating design guidelines, and conducting design audits.

- Gander, C., & Vaidya, S. (2024). *Think like the minimalist*. Penguin Business.
- Tiwari, S. R., & Swarup, R. R. (2024). *Design thinking: A comprehensive textbook*. Wiley India.
- Jain, K., & Kalbande, A. (2023). *UI design: Key to captivate user understanding*. Sybgen Learning.

Suggested Readings:

- Jordan, Pat. (1998*). Human Factors in Product Design: Current Practice and Future Trends.* London: Taylor and Francis.
- Macleod, Dan. (1995). *The Ergonomics Edge: Improving Safety, Quality and Productivity*. New York: Nostrand Reinhold.
- Mugge, R. (2008). *Emotional Bonding with Products: Investigating Product Attachment from a Design Perspective*. VDM Verlag
- Norrid, B and Wilson, J.R. (2001). *Designing Safety into Products*. London: Taylor and Francis.
- Wilson, J.R. and Covlett, N. (2001). *Evaluation of Human Work: A Practical Ergonomics Methodology*. London: Taylor and Francis

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

HEALTH & SAFETY IN BUILT ENVIRONMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Health & Safety in Built Environment	**4**	**2**	**0**	**2**	**As per admission norms**	**Nil**

Learning Objectives

- To sensitize the students towards concept of health & safety in built environment with specific reference to indoor environment
- To build the ability to identify, assess, and manage risks related to air quality, thermal comfort, lighting, noise, and exposure to hazards.
- To equip students with practical knowledge of human health risk assessment and safety management practices relevant to buildings and indoor spaces.

Learning Outcomes

After completing the course, students should be able to:

- Explain how indoor environmental factors such as air quality, temperature, humidity, lighting, and acoustics influence human health and comfort.
- Understand the health and safety issues in built environment with respect to indoor environment quality
- Develop skills to carry out risk assessment and vulnerability analysis
- Get acquainted to environmental and safety management

THEORY
(Credits 2; Hours 30)

UNIT I: Introduction to concept of built environment **7 Hours**

This unit introduces the built environment through a sustainability lens, highlighting systems

thinking, interdependencies, and cross-sectoral approaches.

- Definition and components of built environment
- Whole house approach to built environment
- Introduction to safety and health issues in built Environment
- Impact of physical planning and zoning on health and safety

UNIT II: Fundamentals of the Indoor Environment **8 Hours**

This unit explores key parameters of indoor environmental quality and how they influence comfort, health, and productivity. Students learn to connect theory with real-world building performance.

- Indoor environment parameters: IAQ, Thermal comfort, Lighting and Acoustics
- Health and comfort in the indoor environment
- Indoor air pollution – causes, effects, prevention & control technologies
- Standards pertaining to IAQ guidelines (e.g., ASHRAE, ISHRAE, USEPA, WHO etc.)
- Management of the indoor environment
- Impact of IEQ on occupants' health and productivity

UNIT III: Human Health Risk Assessment (HHRA) **8 Hours**

This unit focuses on turning analysis into practical action. Students learn frameworks for evaluating health risks and planning interventions for real situations.

- Introduction to Human Health Risk Assessment with reference to indoor and outdoor spaces
- Steps in Human health Risk Assessment: Risk identification, Exposure Assessment, Dose-Response Relationship, Risk Communication, Quantification of Human Health Risk Assessment, Human Health Risk Assessment with respect to air, water, soil and water pollution
- Introduction to Social and Environmental Risk Screening

UNIT IV: Environment and Safety Management **7 Hours**

This unit explains how safety and sustainability practices are integrated into organisational systems, governance processes, and reporting frameworks.

- Review and comparison of Global and Indian legal provisions related to Occupational Safety and Health including OSHA and Factories Act

- Introduction to HAZOP and HCCA Studies
- The Total Quality Environment Management
- Introduction to Total Productive Maintenance (TPM), Pillars of TPM

PRACTICAL
(Credits 2; Hours 60)

1. **Mapping the built environment of a campus zone**: Mapping the built environment of a campus zone: Identification of key built-environment components (land use, circulation paths, green/open spaces, building footprints, and service areas) on sketches or existing floor/site plans, and annotation of associated health and safety implications such as noise, traffic exposure, and crowding. Preparation of a labelled map and a brief note summarising major risks and suggested improvements.

2. **Planning and zoning critique exercise:** Comparative review of photographs and plan excerpts from two contrasting neighbourhoods or campuses to examine physical planning and zoning features such as setbacks, mixed land use, open/green space, and traffic separation. Discussion and short written reflection on the likely impacts of these features on walkability, safety, and indoor environmental quality.

3. **Indoor environment parameter profiling:** Recording and interpretation of secondary or provided data for key indoor environmental parameters (temperature, relative humidity, noise levels, illuminance, and CO_2/$PM_{2.5}$) in a classroom or laboratory setting. Comparison of observed values with ASHRAE/ISHRAE/WHO benchmark ranges and completion of a short worksheet on expected comfort, health implications, and likely occupant complaints.

4. **Demonstration Session and Hands on Activity on IAQ Monitor:** Hands on experience on measuring and interpreting indoor air quality data using monitoring tools.

5. **Ventilation and layout assessment:** Analysis of room layout drawings to identify air flow paths, locations of windows and doors, occupancy density, and potential stagnant zones. Marking of likely indoor air quality and thermal comfort issues and preparation of brief recommendations for low-cost improvements such as changes in openings, use of fans, and revised seating layout.

6. **Design of a training module on "Health & Safety in Indoor Environments":** Small-group exercise in which students develop a short training package for facility managers or school/office staff, integrating concepts from all units on built environment, indoor environmental quality, health risk, and safety management. The activity involves identifying key indoor hazards (e.g., poor ventilation, inadequate lighting, noise, crowding), selecting appropriate control measures, and tailoring messages to non-technical audiences

7. **Screening environment for social and environmental risks**: Practical assessment of built spaces to identify risks that affect communities and ecosystems using standardised checklists. Analysing and reporting the results.

8. **Total Quality Environment Management (TQEM) walk-through:** Design of a brief TQEM checklist for an educational or office building focusing on environmental performance and safety (waste handling, energy use, indoor air quality, noise, water use, emergency readiness). In small groups they conduct a walk-through audit, rate performance on each item, and write a short report summarising strengths, non-conformities, and priority corrective actions.

Essential Readings:

UNIT I: Introduction to concept of built environment

- Corburn, J., & Cohen, A. K. (2023). *The built environment and public health* (2nd ed.). Wiley.
- Dovjak, M., & Krainer, A. (2019). *Creating healthy and sustainable buildings: An assessment of health risk factors.* Springer.
- Lopez, R. P. (2023). *The built environment and public health (2nd ed.).* John Wiley & Sons.

UNIT II: Fundamentals of Indoor Environment

- Datta, A., Kumar, P., Sharma, A., & Patel, D. (2023). *Indoor environmental quality in Indian non-residential buildings: Implications for occupants' health and comfort.* Building and Environment, 242, 110550.
- World Health Organization. (2010). *WHO guidelines for indoor air quality: Selected pollutants.* WHO.

UNIT III: Human Health Risk Assessment (HHRA)

- Dwivedi, S., et al. (2023). *Revelations to indoor air pollutants and health risk among women: A systematic review*. Environmental Challenges, 11, 100649.
- Felgueiras, F., Almeida, R. M. S. F., & Gameiro da Silva, M. (2023*). Indoor environmental quality in offices and risk of health symptoms: A review.* Building and Environment, 237, 110360.

UNIT IV: Environment and Safety Management

- Ministry of Labour & Employment, Government of India. (2025). *Key features of the OSH Code, 2020: Implementation primer*. India Briefing.
- PQRI. (2015). *HAZOP guide: Best practices for hazard and operability studies*. Product Quality Research Institute.
- Six Sigma Development Solutions. (2025). *8 pillars of total productive maintenance (TPM): A practical guide for manufacturing and facilities.* SixSigmaDSI.

Suggested Readings:

- Allen, J. G., & Macomber, J. D. (2020). *Healthy buildings: How indoor spaces drive performance and productivity.* Harvard University Press. library
- Burroughs, H.E.& Hansen, S. J. (2011*). Managing Indoor Air Quality*, 5th Edition.
- Datta, A., Kumar, P., Sharma, A., & Patel, D. (2023). *Indoor environmental quality in Indian non-residential buildings: Implications for occupants' health and comfort*. Building and Environment, 242, 110550.
- Green, R., & Parry, M. (2022). Built environment, climate resilience, and health: An emerging research agenda. *Journal of Environmental and Public Health*, Article 8897654.
- Mirzaei, N., Arfaei, N., & Yarahmadi, H. (2020). The impact of indoor environmental quality of green buildings on occupants' health: A systematic review. *Journal of Community Health Research*, 9(1), 54–65.
- REHVA. (2023). Indoor environmental quality and healthy buildings. *REHVA Journal.*

Journal articles (highly cited and relevant)

- Kent, J., & Thompson, S. (2012). Health and the built environment: Exploring foundations for a new interdisciplinary profession. *Health Promotion Journal of Australia*, 23(3), 163–170.

- World Health Organization, & UN-Habitat. (2011*). The built environment and health: An evidence review.* World Health Organization.

- Sharma, M., Khare, M., & Singh, S. (2025). Indoor particle number concentration measurements and associated exposure in Indian urban buildings. *Sustainable Cities and Society*, 112, 105084

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

DISCIPLINE SPECIFIC ELECTIVE

SOCIAL DESIGN METHODS AND RESEARCH

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Social Design Methods and Research	**4**	**3**	**0**	**1**	**As per admission norms**	**Nil**

Learning Objectives

- To understand the foundations, evolution, and global relevance of social design in addressing poverty, inequality, and sustainability.
- To learn key principles of human-centered, participatory, and inclusive design for working with diverse and marginalized communities.
- To gain knowledge of qualitative and quantitative research methods, ethical considerations, and their role in social design.
- To explore social innovation, systems thinking, CSR, and sustainability as frameworks for designing socially impactful solutions.

Learning Outcomes

- Students will be able to explain core concepts of social design, including its evolution, purpose, and relevance to contemporary social challenges.
- Students will demonstrate an understanding of inclusive and participatory design principles and their application to marginalized groups.
- Students will understand and differentiate qualitative and quantitative research methods and apply ethical considerations in design research.
- Students will be able to analyse social innovation models, CSR initiatives, and sustainability concepts to evaluate socially responsible design practices.

THEORY
(Credits 3; Hours 45)

UNIT I: Foundations of Social Design and Inclusive Research 11 Hours

This unit introduces the basics of social design, highlighting inclusive principles and ethical research methods for understanding social needs.

- Social Design Overview: Definition, evolution, and global challenges (poverty, inequality, sustainability)
- Design Principles: Human-centered, participatory, and inclusive design for social impact
- Research Methods: Integrating qualitative and quantitative methods; ethical considerations in social design.

UNIT II: Inclusivity, CSR, and Traditional Knowledge in Social Design 11 Hours

This unit focuses on designing for marginalized groups while integrating CSR practices and preserving traditional design knowledge.

- Inclusivity in Design: Designing for marginalized groups (elderly, differently-abled, low-income).
- Corporate Social Responsibility (CSR): Role of design in CSR for social well-being and environmental responsibility.
- Preserving Traditional Designs: Safeguarding indigenous practices and integrating traditional knowledge in modern design.

UNIT III: Social Innovation, Systems Thinking, and Sustainability 11 Hours

This unit explores how design drives social innovation through systems thinking and sustainable approaches with measurable impact.

- Social Innovation: Design's role in driving social change and addressing societal needs.
- Design Thinking & Systems Thinking: Approaches for creating scalable, sustainable solutions.
- Sustainability: Environmental, social, and economic sustainability in design projects; measuring social impact with assessment tools.

UNIT IV: Applications of Social Design in Communities and Public Spaces 12 Hours

This unit examines practical applications of social design in communities, public spaces, CSR initiatives, and advocacy.

- Community Empowerment: Engaging communities in participatory design for sustainable solutions.

- Inclusive Public & Health Spaces: Designing safe, accessible public spaces and environments that enhance physical and mental well-being.
- CSR & Advocacy in Design: CSR-based interventions (education, housing, sustainability) and using design for policy influence, social justice, and human rights.

PRACTICAL

(Credits 1; Hours 30)

1. Structured user research and insight building: Conduct surveys, interviews, focus groups, or mapping exercises to understand user needs, barriers, and aspirations; compile key insights.
2. Engagement with traditional craftspersons: Interact with traditional Indian artisans to learn about cultural knowledge, heritage practices, materials, and context-based design wisdom.
3. Participatory design and idea co-creation: Facilitate a co-design session with peers or mock community members to collaboratively generate and refine possible solution directions.
4. Concept framing and visual representation: Develop concept directions through sketches, storyboards, user journey maps, or design briefs to communicate proposed solutions.
5. Assessment of inclusivity and social relevance: Evaluate concept ideas for accessibility, inclusivity, feasibility, cultural sensitivity, and relevance to difference marginalized groups.
6. Feedback collection, refinement, and final presentation: Gather feedback through discussions or walkthroughs, refine the proposed solutions, and present the final concept with justification based on user insights and social impact.

Essential Readings

UNIT I:

This unit introduces the basics of social design, highlighting inclusive principles and ethical research methods for understanding social needs.

- Manzini, E. (2015). Design, when everybody designs: An introduction to design for social innovation. MIT Press.
- Brown, T., & Wyatt, J. (2009). Design Thinking for Social Innovation. Stanford Social Innovation Review, 8(1), 31–35. https://doi.org/10.48558/58Z7-3J85

UNIT II:

This unit focuses on designing for marginalized groups while integrating CSR practices and preserving traditional design knowledge.

- Noel, L.-A. (2023). *Design social change: Strategies for equity, inclusion, and belonging*. Ten Speed Press.
- National Institute of Urban Affairs. (2020). *An accessible, safe and inclusive city*. NIUA, Government of India.

- Ministry of Culture, Government of India. (2019). *Scheme for safeguarding the intangible cultural heritage*. Government of India.
- National Institute of Design. (2017). *Craft traditions of India*. National Institute of Design.
- Papanek, V. (2009). Design for the real world: Human ecology and social change (2nd ed.). Thames & Hudson.

UNIT III:

This unit explores how design drives social innovation through systems thinking and sustainable approaches with measurable impact.

- Manzini, E. (2015). Design, when everybody designs: An introduction to design for social innovation. MIT Press.
- Halse, J., Brandt, E., Clark, B., & Binder, T. (2010). Rehearsing the future: Social design experiments in innovation and democracy. Danish Design School Press.

UNIT IV:

This unit examines practical applications of social design in communities, public spaces, CSR initiatives, and advocacy.

- Amatullo, M., Boyer, B., May, S., & Shea, A. (Eds.). (2023). Design for social innovation: Case studies from around the world. Routledge.
- Government of India. (2015). *Accessible India campaign (Sugamya Bharat Abhiyan)*. Ministry of Social Justice and Empowerment.
- IDEO.org. (2015). The field guide to human-centered design. IDEO.org.
- Steinfeld, E., & Maisel, J. L. (2012). *Universal design: Creating inclusive environments*. Wiley.

Suggested Readings

- Melles, G. (Ed.). (2022). *Designing social innovation for sustainable livelihoods*. Springer.
- Denzin, N. K., & Lincoln, Y. S. (Eds.). (2018). The SAGE handbook of qualitative research (5th ed.). SAGE.
- Silverman, D. (2017). Doing qualitative research (5th ed.). SAGE.
- Muratovski, G. (2016). Research for designers: A guide to methods and practice. SAGE.
- Martin, B., & Hanington, B. M. (2012). Universal methods of design: 100 ways to research complex problems, develop innovative ideas, and design effective solutions. Rockport.

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

DISCIPLINE SPECIFIC ELECTIVE

INCLUSIVE DESIGN SYSTEMS

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Inclusive Design Systems	4	3	0	1	As per admission norms	Nil

Learning Objectives

- To develop an understanding of the core concepts, principles, and legal frameworks of inclusive and universal design.
- To build the ability to assess interior and exterior environments for accessibility using structured tools and user-centered methods.
- To cultivate skills in identifying user needs especially for older adults and individuals with disabilities and translating them into inclusive design opportunities.
- To enable students to review, analyze, and propose context-appropriate inclusive design interventions supported by case studies, standards, and practical findings.

Learning Outcomes

After completing the course, students will be able to:

- Understand inclusive design concepts, principles, and accessibility standards.
- Identify user needs and barriers faced by diverse populations, especially persons with disabilities and the elderly.
- Develop the ability to assess spaces and products for accessibility and propose practical improvements.
- Demonstrate sensitivity, awareness, and critical thinking in applying inclusive design approaches to real-world contexts.

THEORY

(Credits 3; Hours 45)

UNIT I: Foundations of Inclusive Design 11 Hours

This unit introduces students to the fundamental concepts, scope, and relevance of inclusive and accessible design, focusing on creating awareness of diverse human needs and abilities.

- Concept, scope, and importance of inclusive design.
- Understanding human variability and spatial needs of Persons with disabilities (PwDs).
- Differences and overlaps between Inclusive Design, Universal Design, and Conventional Design.
- Universal Design philosophy and its integration in built environments and products.

UNIT II: Dimensions, Principles, and User Diversity 12 Hours

This unit deepens understanding of user diversity, principles of inclusive design, and the role of assistive technologies in enhancing usability for all population groups.

- Dimensions of Inclusive Design: physical, sensory, cognitive, and social.
- Principles of inclusive design and their practical applications.
- Frameworks for understanding user diversity and design personas.
- Assistive devices and emerging technologies for accessibility (mobility aids, communication devices, smart assistive tech).
- Inclusive design evaluation methods and user testing.

UNIT III: Accessibility in Interior and Exterior Spaces 11 Hours

This unit focuses on spatial accessibility, inclusive architecture, and environmental design strategies for creating barrier-free indoor and outdoor environments.

- Concepts and methodologies for inclusive spatial design.
- Accessibility requirements for interior spaces (homes, public buildings, workspaces).
- Accessibility requirements for exterior spaces (streetscapes, parks, transport, public amenities).

UNIT IV: Legal, Policy and Ethical Landscape 11 Hours

This unit examines regulatory frameworks and responsible design practice.

- Legal norms and standards: RPwD Act, BIS Codes, ISO standards.
- Government policies and initiatives promoting accessibility and universal design.
- Ethical considerations in designing for disability, aging, and vulnerable populations.
- Principles of responsible, participatory, and rights-based design approaches.

PRACTICAL

(Credits 1; Hours 30)

1. Conduct accessibility audits of selected indoor and outdoor spaces using structured checklists to identify physical, sensory, and navigational barriers affecting diverse users.
2. Map user experiences and activity flows for older adults and individuals with disabilities to identify unmet needs, challenges, and opportunities for inclusive design.
3. Analyze national and international aspects of inclusive architecture or built environments through secondary sources, highlighting effective design strategies and lessons for local application.
4. Apply tools and techniques for accessibility assessment, including barrier mapping, circulation analysis, and spatial observation, to evaluate real environments.
5. Review existing products, interior elements, or public-use items to identify inclusivity gaps and propose realistic improvements aligned with universal design principles.
6. Prepare a practical, inclusive design proposal based on user needs, audit findings, and legal accessibility guidelines

Essential Readings

UNIT I:

This unit introduces students to the fundamental concepts, scope, and relevance of inclusive and accessible design, focusing on creating awareness of diverse human needs and abilities.

- Nussbaumer, L. L. (2011). *Inclusive design: A universal need*. Bloomsbury

Academic. ISBN 978-1563679216
- Steinfeld, E., & Maisel, J. L. (2012). *Universal Design: Creating Inclusive Environments*. Wiley.

UNIT II:

This unit deepens understanding of user diversity, principles of inclusive design, and the role of assistive technologies in enhancing usability for all population groups.

- Maisel, J. L., Steinfeld, E., Basnak, M., Smith, K., & Tauke, M. B. (2018). *Inclusive design: Implementation and evaluation*. Routledge.
- Gilbert, R. M. (2025). *Inclusive design for a digital world: Designing with accessibility in mind* (2nd ed.). Apress.

UNIT III:

This unit focuses on spatial accessibility, inclusive architecture, and environmental design strategies for creating barrier-free indoor and outdoor environments.

- Goodman-Deane, J., Dong, H., Heylighen, A., Lazar, J., & Clarkson, J. (Eds.). (2023). *Design for sustainable inclusion: CWUAAT 2023*. Springer.
- Preiser, W., & Smith, K. (2011). *Universal design handbook* (2nd ed.). McGraw-Hill.
- Gupta, A., Yadav, M., & Nayak, B. K. (2025). A Systematic Literature Review on Inclusive Public Open Spaces: Accessibility Standards and Universal Design Principles. Urban Science, 9(6), 181. https://doi.org/10.3390/urbansci9060181

UNIT IV:

This unit examines regulatory frameworks and responsible design practice.

- Nussbaumer, L. L. (2011). *Inclusive design: A universal need*. Bloomsbury Academic. ISBN 978-1563679216

Suggested Readings

- Langdon, P., Lazar, J., Heylighen, A., & Dong, H. (Eds.). (2020). Designing for inclusion: Inclusive design—Looking towards the future. Springer.
- Heylighen, A. (2020). Designing for disabilities: Inclusive architecture reconsidered. Routledge.
- Clarkson, J., Coleman, R., Keates, S., & Lebbon, C. (2003). Inclusive design: Design for the whole population. Springer.
- Ostroff, E. (2011). Universal design: Principles and models. Fair Housing Center.

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

DISCIPLINE SPECIFIC ELECTIVE

CORPORATE SOCIAL RESPONSIBILITY AND SUSTAINABILITY REPORTING

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Corporate Social Responsibility and Sustainability Reporting	4	3	0	1	As per admission norms	Nil

Learning Objectives

- To understand the meaning, scope and importance of Corporate Social Responsibility (CSR)
- To learn about the policies, practices industry norms, potential business benefits, stakeholder influence with regard to CSR
- To learn about the planning, processes, implementation and monitoring of CSR activities
- To understand the need and benefits of sustainability reporting for businesses
- To learn about the various sustainability reporting guidelines

Learning Outcomes

After completing the course, students will be able to:

- Develop an understanding of the scope, approaches, policy and procedure of Corporate Social Responsibility (CSR)
- Understand planning, processes, implementation and monitoring of CSR projects through case studies
- Understand and evaluate CSR reports as per standard reporting guidelines
- Know about sustainability standards, indices and reporting guidelines

THEORY

(Credits 3; Hours 45)

UNIT I: Basics of Corporate Social Responsibility (CSR) 8 Hours

This unit aims at orienting the students towards the concept and importance of Corporate Social Responsibility (CSR), triple bottom line, and ESG

- Meaning, definition and importance of CSR
- History and evolution of CSR
- Sustainable businesses, triple bottom line, ESG (Environmental, Social and Governance)
- Practices and Initiatives for CSR, legal and economic perspective, theories, industry norms
- Global and Indian Scenario with Case studies

UNIT II: Corporate Social Responsibility: Policies and Practices 12 Hours

This unit aims to create an understanding on Indian legislations for CSR, UN guiding principles and SDGs, and other practices related to CSR.

- Indian legislations for CSR; Companies Act, 2013 and Amendments
- Global principles and guidelines for CSR (GRI framework, UN Global compact, CDP, OECD guidelines for multinational corporations, NVGs etc.)
- SDGs and CSR
- Globalization and CSR

UNIT III: CSR Activities: Planning and Strategizing 13 Hours

This Unit aims to create an understanding on planning and strategizing CSR activities.

- CSR planning and strategizing
- CSR and SMEs
- CSR Audit; issues related to CSR Audit
- Brand building through CSR communications

UNIT IV: Sustainability Reporting: Standards and Indices 12 Hours

This Unit aims to create an understanding towards the need and benefits of sustainability reporting and different sustainability reporting guidelines.

- Financial and non-financial disclosures, need and benefits of sustainability reporting

- Tools for stakeholder communication
- Sustainability Reporting Guidelines
- Structure of a sustainability report
- Sustainability reporting as per different guidelines

PRACTICAL

(Credits 1; Hours 30)

- CSR initiatives taken by corporates - Analysis through primary research
- Critical analysis of implementation strategies of CSR initiatives with reference to Foundation/Trust/Section 8 Companies etc.
- Planning innovative CSR Projects/Programmes in context of SDGs
- CSR communications: preparation of presentations, websites, print media, social media etc.
- Evaluation and preparation of CSR/sustainability/ESG reports with reference to different reporting guidelines like GRI, CDP, NVG etc.

Essential Readings:

UNIT I:

- Gupta, S. (2025). Corporate social responsibility and sustainable development goals for a developed India @2047. *Journal of Sustainable Business, 10*, 15. https://doi.org/10.1186/s40991-025-00118-1
- Debnath, P., & Chellasamy, P. (2022). An empirical study on issues and challenges of corporate social responsibility activities in India. *Asian Journal of Management, 13*(4), 345–350. https://doi.org/10.52711/2321-5763.2022.00056
- Institute of Directors India. (2020). *A Handbook on Corporate Social Responsibility, A Condensed Guide for Corporate Directors & Senior Executive*. Institute of Directors, New Delhi, India.

UNIT II:

- Mital, M., & Gupta, P. (Eds.). (2025). *Environmental Studies: Resources and Sustainability - A Textbook and Practical Manual.* Elite Publishing.

- Wirba, A. V. (2023). Corporate social responsibility (CSR): The role of government in promoting CSR. *Journal of the Knowledge Economy*, 1–27. https://doi.org/10.1007/s13132-023-01185-0
- Garg, K. (2021). *Corporate Social Responsibility (3rd edition)*. Bharat Law House Pvt. Ltd.

UNIT III:

- Lumde, N. (2024). *ESG and CSR: Strategies for Career Success and Corporate Responsibility*. Notion Press.
- Chandler, D. (2020). *Strategic Corporate Social Responsibility: Sustainable Value Creation.* SAGE Publications.

UNIT IV:

- Parikh, K. M. (2025). *ESG & BRSR Reporting*. Taxmann.
- Joseph, P. S. (2025). *A Guide to Sustainability Reporting in the Age of Greenwashing*. Self published.

Suggested Readings:

- Lumde, N. (2018). *Corporate Social Responsibility in India: A Practitioner's Perspective*. Notion Press. ISBN-10: 1644295431, ISBN-13: 978-1644295434.
- Stangis, D., & Smith, K. V. (2017). *The Executive's Guide to 21st Century Corporate Citizenship: How your Company Can Win the Battle for Reputation and Impact*. Emerald Publishing Ltd.
- Mitra, N., & Schmidpeter, R. (2016). *Corporate Social Responsibility in India: Cases and Development after the Legal Mandate.* Springer International Publishing, Switzerland.
- Reddy, V. R., & Dheeraja, C. (2016). *The Six Essential Steps in Implementing CSR*. Studera Press, New Delhi.
- Ahluwalia, J. S. (2015). *Environmental Governance for Sustainability in Ahluwalia*, J. S. (Editor), Environmental Governance: Transition to a Green Economy, New Delhi, IOD Publishing
- Nielsen. (2015). *The Nielsen Global Survey of Corporate Social Responsibility and Sustainability*. Oxford, Nielsen.
- Chakrabarty, B. (2015). *CSR in India*. Routledge.

- Epstein, M. J., & Buhovac, A. R. (2014). *Making Sustainability Work: Best Practices in Managing and Measuring Corporate Social, Environmental, and Economic Impacts*. Greenleaf Publishing Ltd.
- Korngold, A. (2014). *A Better World, Inc.: How Companies Profit by Solving Global Problems…Where Governments Cannot.* Palgrave Macmillan.
- Agarwal, S. (2013). *CSR in India*. SAGE Publications.
- Baxi, C. V. and Roy, R. S. (2011). *Corporate Social Responsibility,* Vikas Publishing House, New Delhi.
- Chatterji, M. (2011). *Corporate Social Responsibility*. Oxford University Press India; Reprint edition. ISBN-10: 0198069839 ,ISBN-13 : 978-0198069836.

Journal articles (highly cited and relevant)

- Chatterjee, S., & Mirza, D. (2023). Sustainability reporting in India: A critical assessment of Business Responsibility Reports of the top 100 companies. *Sustainability Accounting, Management and Policy Journal*, *14*(7), 1541–1572.
- Thomas, R., & Bhaumik, A. (2023). ESG practices and firm performance in Indian listed companies. *Journal of Risk and Financial Management*, *16*(9), 405.
- Garg, P. (2024). Corporate responsibility (CSR), ESG goals and sustainable development in India—An analysis. *Corporate Social Responsibility in India* (pp. 115-132). Springer, Singapore.
- Mishra, M. K. (2020). Sustainability reporting practices of Indian corporate sector: A comparative analysis. *Journal of Business and Financial Affairs*, *9*(3), 375.

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

DISCIPLINE SPECIFIC CORE

ADVANCED RESEARCH METHODOLOGY

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Advanced Research Methodology	**2**	**2**	**0**	**0**	**Should be aware of Basic Research Methodology and Statistics**	**Nil**

Learning Objectives

- Construct a theoretical framework for diverse research problems.
- Compare and contrast the design elements of experimental, quasi-experimental, and non-experimental studies.
- Formulate appropriate research questions for a mixed-methods design.

Learning Outcomes

After completing the course, students will be able to:

- Design complex research projects, including mixed-methods and longitudinal studies, appropriate for advanced academic inquiry.
- Determine the internal and external validity of research designs.
- Evaluate and justify the selection of advanced sampling techniques.

THEORY

(Credits 2; Hours 30)

UNIT I: Philosophical and Theoretical Foundations **8 Hours**

This unit introduces the philosophical paradigms and worldviews that inform research inquiry and methodological choices. It covers major research designs, issues of internal and external validity, advanced literature review techniques including systematic reviews and metaanalysis, and approaches to theory building through inductive, deductive, and abductive

reasoning.

- Paradigms and Worldviews: The relationship between researcher worldview and methodological choice.
- Types of Research Designs: Experimental, Quasi and Non/ pre–Experimental Designs; Descriptive and Analytical (Observational Interventional)-Research Designs
- Internal and external validity of research designs
- Advanced Literature Review: Evaluating research articles Systematic Reviews, Meta-Analysis.
- Theory Building: Inductive, Deductive, and Abductive theory development

UNIT II: Quantitative Design & Sampling 8 Hours

This unit focuses on advanced quantitative research designs, including experimental, longitudinal, and cross-sectional approaches. It covers sophisticated sampling techniques, sample size determination, and sources of sampling error, enabling learners to design rigorous and generalizable quantitative studies.

- Advanced Experimental Designs: RCT Designs, Factorial designs, Repeated Measures (within-subjects).
- Longitudinal Studies: Panel, Cohort, and Trend designs; Challenges of attrition and data management.
- Cross-Sectional: Survey and other quantitative designs.
- Advanced Sampling Techniques: Stratified Cluster Sampling, Multi-Stage Sampling, Adaptive Sampling and other techniques.
- Sample size calculation and sampling error

UNIT III: Qualitative Methodologies 8 Hours

This unit introduces key qualitative research methodologies such as ethnography, case study, narrative inquiry, and participatory research. It emphasizes qualitative sampling strategies, data triangulation, reflexivity, and methodological rigor in the generation and interpretation of qualitative data.

- Ethnographic Research: Key components, thick description, emic vs. etic perspectives.
- Case Study Research: Single vs. Multiple-case designs, holistic vs. embedded analysis.
- Narrative Inquiry: Life stories, biographical methods, and thematic-structural analysis.
- Action and Participatory Researches
- Sampling techniques in qualitative researches

- Data Triangulation and Reflexivity

UNIT IV: Mixed-Methods and Ethical Imperatives 6 Hours

This unit explores mixed-methods research designs and strategies for integrating qualitative and quantitative data. It addresses methodological rigor in mixed-methods inquiry and examines ethical considerations in research, including issues of consent, confidentiality, privacy, and research with vulnerable and marginalized populations.

- Mixed-Methods Designs: Convergent Parallel, Explanatory Sequential, Exploratory Sequential designs; Notation systems (e.g., QUAL to QUAN)
- Integration and Mixing: Strategies for data mixing, synthesis, and developing a unified interpretation.
- Methodological Rigor: Establishing transferability, validity, and reliability in mixed-method research.
- Research– Ethics: The ethics of researching diverse population groups and issues of vulnerable and marginalized groups. Issues of consent, confidentiality, and privacy in research.

Essential Readings

UNIT I

This unit introduces the philosophical perspectives that guide advanced research practices. It focuses on how different research paradigms and worldviews influence the selection of research designs and methodological approaches. Students will study different types of research designs, key issues of validity, advanced literature review methods, and approaches to theory development. The unit aims to strengthen students' conceptual clarity and ability to link theory, methodology, and research questions in scholarly inquiry.

- Dagher, D., & Khan, M. (2025). Writing a systematic review and meta-analysis: A step-by-step guide. *Sports Health*, *17*(5), 885–890. https://doi.org/10.1177/19417381251364686
- Mandlik, D., Kalkar, P., Singh C. (2025) *Advanced Research Methodologies and Practices*. Taylor & Francis.
- Mallik, R., Kurian, M., Prajapati, V., Pithadia, M. (2023) *Advanced Research Methodology*. AG Publishing House
- Neuman, W. Laurence (2008) Social Research Methods: Qualitative and Quantitative Approaches (6th ed., chaps3-5) Pearson Education

UNIT II

This unit focuses on advanced quantitative research designs and sampling strategies. Students will

explore experimental, longitudinal, and cross-sectional designs, along with advanced sampling techniques and sample size considerations. Emphasis is placed on understanding complex experimental structures and multivariate approaches. Through this unit, students will develop the ability to design methodologically sound quantitative studies and critically evaluate quantitative research findings. The unit supports informed decision-making in selecting appropriate designs and sampling strategies for rigorous empirical research.

- Baumeister, M., Kropf, S., & Pöpper, C. (2022). Quantile-based MANOVA: A new tool for inferring multivariate data in factorial designs. *arXiv preprint arXiv:2211.15484*. https://doi.org/10.48550/arXiv.2211.15484
- Caruana, E. J., Roman, M., Hernández-Sánchez, J., & Solli, P. (2015). Longitudinal studies. *Journal of Thoracic Disease, 7*(11), E537–E540. https://doi.org/10.3978/j.issn.2072-1439.2015.10.63
- Neuman, W. Laurence (2008) Social Research Methods: Qualitative and Quantitative Approaches (6th ed., chaps9-11) Pearson Education
- Kerlinger, F. N. (1973). *Foundations of behavioral research* (2nd ed., chaps 7,8, 17-26). Holt, Rinehart, and Winston.
- Burns, Robert, B. (2000) *Introduction to Research Methods*(4th ed.,chaps8-10, 20-22, 29,30). Sage Publications
- Kothari, C.R., Garg, Gaurav (2023) *Research Methodology: Methods and Techniques* (5th ed.) New Age International Publishers
- Black, J. A., & Champion, D. J. (1976). *Methods and issues in social research*. John Wiley & Sons

UNIT III

This unit examines advanced qualitative research approaches used to explore social and cultural phenomena. Students will study ethnographic, case study, narrative, and participatory research designs, focusing on their key features and applications. It also focuses on appropriate sampling strategies in qualitative inquiry. The unit further highlights the importance of reflexivity, ethical engagement, data triangulation as key elements for ensuring credibility and depth in qualitative research. The students will be equipped to design and assess qualitative studies with methodological rigor and sensitivity to social and cultural contexts.

- M. E. R. (2020). Methodological integrity in critical qualitative research. *The Counseling Psychologist*, *48*(6), 848–874. https://doi.org/10.1177/0011000020950348
- Luthfiandana, R., Santioso, L. L., Febrian, W. D., Soehaditama, J. P., & Sani, I. (2024). Qualitative research concepts: Phenomenology, grounded theory, ethnography, case study,

narrative. *Scientia Journal of Applied Management, 2*(1), 26–36. https://doi.org/10.38035/sjam

- Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in implementation research. *Administration and Policy in Mental Health and Mental Health Services Research, 42*(5), 533–544. https://doi.org/10.1007/s10488-013-0528-y
- Denzin, N. K., Lincoln, Y. S., Giardina, M. D., & Cannella, G. S. (Eds.). (2024). *The SAGE handbook of qualitative research* (6th ed.). SAGE Publications
- Neuman, W. Laurence (2008) Social Research Methods: Qualitative and Quantitative Approaches (6th ed., chap 13) Pearson Education
- Kerlinger, F. N. (1973). *Foundations of behavioral research* (2nd ed., chaps 27-32). Holt, Rinehart, and Winston
- Burns, Robert, B. (2000) *Introduction to Research Methods*(4th ed.,chaps23-28). Sage Publications
- Kothari, C.R., Garg, Gaurav (2023) *Research Methodology: Methods and Techniques* (5th ed.) New Age International Publishers
- Black, J. A., & Champion, D. J. (1976). *Methods and issues in social research*. John Wiley & Sons**.**

UNIT IV

This unit introduces mixed-methods research designs that integrate quantitative and qualitative approaches. Students will examine different mixed-methods designs and strategies for integrating data during analysis and interpretation. The unit emphasizes maintaining methodological rigor and coherence when combining diverse data sources. The unit also addresses ethical responsibilities in research, with emphasis on consent, confidentiality, and research involving vulnerable and marginalized groups. It aims to develop responsible research practices while enabling students to produce comprehensive and ethically grounded research outcomes.

- Creswell, J. W., & Creswell, J. D. (2023). *Research design: Qualitative, quantitative, and mixed methods approaches* (6th ed.). SAGE Publications, Inc.
- Minc, S. D., Chandanabhumma, P. P., Sedney, C. L., Haggerty, T. S., Davidov, D. M., & Pollini, R. A. (2022). Mixed methods research: A primer for the vascular surgeon. *Seminars in Vascular Surgery, 35*(4), 447–455. https://doi.org/10.1053/j.semvascsurg.2022.09.003
- Findley, M. G., & Faten, A. (2024). Vulnerability in research ethics: A call for assessing vulnerability and implementing protections. *Proceedings of the National Academy of Sciences, 121*(11), e2322821121. https://doi.org/10.1073/pnas.2322821121
- Neuman, W. Laurence (2008) Social Research Methods: Qualitative and Quantitative Approaches (6th ed., chaps 5,13) Pearson Education

Suggested Readings

- Baumeister, M., Kropf, S., & Popper, C. (2022). Quantile-based MANOVA: A new tool for inferring multivariate data in factorial designs. *arXiv preprint arXiv:2211.15484*. https://doi.org/10.48550/arXiv.2211.15484
- Dagher, D., & Khan, M. (2025). Writing a systematic review and meta-analysis: A step-by-step guide. *Sports Health, 17*(5), 885–890. https://doi.org/10.1177/19417381251364686
- M. E. R. (2020). Methodological integrity in critical qualitative research. *The Counseling Psychologist*, *48*(6), 848–874. https://doi.org/10.1177/0011000020950348
- Findley, M. G., & Faten, A. (2024). Vulnerability in research ethics: A call for assessing vulnerability and implementing protections. *Proceedings of the National Academy of Sciences*, *121*(11), https://doi.org/10.1073/pnas.2322821121

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

DISCIPLINE SPECIFIC CORE

TOOLS FOR RESEARCH

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course
		Lecture	Tutorial	Practical		
Tools for Research	2	2	0	0	Should be aware of Advanced Research Methodology and Statistics	Nil

Learning Objectives

- Design and evaluate quantitative and qualitative tools.
- Understand data processing and effectively utilize common statistical packages.
- Apply coding techniques, and utilize digital platforms and AI in research design and analysis.

Learning Outcomes

After completing the course, students will be able to:

- Differentiate between major quantitative and qualitative tools.
- Demonstrate proficiency in data entry, coding and cleaning.
- Utilize Digital Platforms and AI effectively in the formulation, administration, and data collection.
- Proficiently utilize specialized software for qualitative data analysis and quantitative statistical testing.

THEORY
(Credits 2; Hours 30)

UNIT I: Quantitative Tools **8 Hours**

This unit introduces quantitative research tools, including questionnaires and rating scales, and the principles of their development, reliability, and validity. It covers major rating scales and key steps in scale construction, analysis, and standardization, along with the use of digital platforms and AI for tool development and administration.

- Types of Quantitative tools: Questionnaire, Semi-Structured Interview Schedules, Rating Scale.
- Tool Development: Content Validity, Techniques of Reliability and Validity assessment of Tools.
- Rating Scales: Types of Rating Scales- Likert, Guttman and Thurstone Scales.
- Development of Rating Scales: Item Generation and Content Validation, Item Analysis, Internal Consistency and Factor Analysis, Scale Refinement and Standardization.
- Quantitative tools and Digital Platforms and AI for the formulation and administration of quantitative tools.

UNIT II: Quantitative Data Coding and Analysis **7 Hours**

This unit focuses on quantitative data coding, entry, and cleaning using statistical software. It introduces variable definition, handling of missing data, basic automation through spreadsheet and open-source tools, and familiarization with commonly used statistical software for data management and analysis.

- Data Entry and Cleaning (Statistical Software): Variable definition, handling missing data (listwise/pairwise deletion).
- Automation and Scripting Basics: Introduction to basic data processing scripts (e.g., using Advance Excel or other open source software for data import/export).
- Statistical Software Usage: Navigating common statistical packages

UNIT III: Qualitative Tools **8 Hours**

This unit introduces major qualitative research tools and their application in research. It covers the development and validation of qualitative tools, descriptive and thematic coding techniques, and the use of digital platforms and AI for qualitative data collection and analysis.

- Types of tools: In-Depth Interview, Focus Group Discussion, Case Study, Observation, Diaries, Oral Narratives/Stories and others.
- Developing qualitative tools: tool selection and development, pilot testing and refinement.
- Validity of qualitative tools: Qualitative vs. Quantitative Validity, Methods for establishing validity in qualitative tools.
- Coding Techniques: Descriptive and Thematic coding

- Digital Platforms and AI for qualitative tools and data analysis.

UNIT IV: Qualitative Data Coding and Analysis **7 Hours**

This unit focuses on qualitative data coding and analysis using qualitative data analysis software. It introduces the interface and use of QDAS for importing, coding, cleaning, and managing text, audio, and video data, along with an overview of NVivo, ATLAS.ti, and other open-source tools.

- Qualitative Data Analysis Software (QDAS) Interface: Importing, coding and cleaning different data types (text, audio, video)
- Overview of NVivo, ATLAS.ti and other open-source QDAS software

Essential Readings:

UNIT I

This unit aims to build an understanding of quantitative tools used for the purpose of data collection. The unit introduces various types of quantitative data tools, their development and assessment of their reliability and validity. This unit further introduces various rating scales and their development, validation and standardisation.

- Creswell, J. W., & Creswell, J. D. (2023). *Research design: Qualitative, quantitative, and mixed methods approaches* (6th ed.). SAGE Publications.
- Cheema, J. R. (2014). Using listwise deletion to cope with missing data: A cautionary note. *Journal of Educational and Developmental Psychology, 4*(1), 127–134.
- Ghasemi, A., & Zahediasl, S. (2012). Normality tests for statistical analysis. *International Journal of Endocrinology and Metabolism, 10*(2), 486–489.
- Gotschall, T., & Gotschall, T. (2018). EndNote, Mendeley, RefWorks, Zotero: A comparative review. *Journal of Electronic Resources in Medical Libraries, 15*(1), 1–18.
- Johnson, R., & Witsel, M. (2018). ORCID: A necessary piece of infrastructure for global research evaluation. *Frontiers in Research Metrics and Analytics, 3*(28).

UNIT II

This unit includes the learning of coding and analysis of quantitative data. The unit also deals with basics of data processing scripts and also introduces common statistical packages.

- Cheema, J. R. (2014). Using listwise deletion to cope with missing data: A cautionary note. *Journal of Educational and Developmental Psychology, 4*(1), 127–134.

- Gotschall, T., & Gotschall, T. (2018). EndNote, Mendeley, RefWorks, Zotero: A comparative review. *Journal of Electronic Resources in Medical Libraries, 15*(1), 1–18.
- Hausner, E. T., & Hirt, S. J. (2020). Improving reproducibility in academic data-intensive research through computational workflows. *Frontiers in Research Metrics and Analytics, 5*(7).
- Johnson, R., & Witsel, M. (2018). ORCID: A necessary piece of infrastructure for global research evaluation. *Frontiers in Research Metrics and Analytics, 3*(28).

UNIT III

This unit introduces various types of qualitative tools used in research, their development, pilot testing and refinement. The unit also introduces techniques of establishing validity and of such qualitative tools of data collection. This section also discusses prominent digital and AI tools for qualitative research

- Creswell, J. W., & Creswell, J. D. (2023). *Research design: Qualitative, quantitative, and mixed methods approaches* (6th ed.). SAGE Publications.
- Gotschall, T., & Gotschall, T. (2018). EndNote, Mendeley, RefWorks, Zotero: A comparative review. *Journal of Electronic Resources in Medical Libraries, 15*(1), 1–18.
- Johnson, R., & Witsel, M. (2018). ORCID: A necessary piece of infrastructure for global research evaluation. *Frontiers in Research Metrics and Analytics, 3*(28).
- Weninger, M. (2024). Open coding in qualitative research: A systematic review and guide. *ResearchGate* (preprint).

UNIT IV

This unit provides an overview of qualitative data coding and analysis softwares.

- Allsop, D. B., Chelladurai, J. M., Kimball, E. R., Marks, L. D., & Hendricks, J. J. (2022). Qualitative methods with NVivo software: A practical guide for analyzing qualitative data. Psych, 4(2), 142–159.
- Provalis Research. (n.d.). QDA Miner: Qualitative Data Analysis Software. Retrieved from https://provalisresearch.com/products/qualitative-data-analysis-software/
- Urban Institute. (2025). Urban Institute Data Visualization Style Guide. Retrieved from http://urbaninstitute.github.io/graphics-styleguide/
- Al-Kassimi, M., & Al-Sharqi, A. (2020). Data visualization techniques: Model and taxonomy. International Journal of Research in Engineering and Science, 8(3), 44–53.

Suggested Readings:

- Kang, H. (2013). The prevention and handling of the missing data. *Korean Journal of Anesthesiology*, *64*(5), 402–406.
- Kery, M., & Myers, M. (2020). Improving reproducibility in academic data-intensive research through computational workflows. *Frontiers in Research Metrics and Analytics*, *5*(7).
- Saravanakumar, A. P., & Shitharth, S. (2023). A survey on sentiment analysis: Techniques, algorithms, and application areas. *Journal of King Saud University – Computer and Information Sciences*, *35*(3).
- Takes, F. W. (2024). Gephi tutorial for graph/network visualization. Retrieved from https://github.com/franktakes/gephi-tutorial

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

SEMESTER II

DISCIPLINE SPECIFIC ELECTIVE COURSE
ENERGY POLICY, SYSTEMS AND SUSTAINABILITY

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Energy Policy, Systems and Sustainability	**4**	**2**	**0**	**2**	**As per admission norms**	**Nil**

Learning Objectives

- To understand the global and Indian scenario of energy demand and supply
- To learn about the impact of energy consumption on the environment and climate change
- To understand the different types of energies, their availability and potential with emphasis on the renewable sources of energy
- To learn about the policies and legislative frameworks in India and globally, pertaining to the energy sector including key stakeholders
- To learn about energy conservation, benefits and challenges faced, energy audits and energy management

Learning Outcomes

After completing the course, students will be able to:

- Understand the global and Indian scenario of energy demand and supply
- Understand the impact of energy consumption on the environment and climate change
- Appreciate the different sources of energy and their availability
- Understand the global and Indian policy structure for the energy sector
- Understand energy conservation, audit and management

THEORY

(Credits 2; Hours 30)

UNIT I: Energy Sources: Global and Indian Energy Scenario 7 Hours

This unit throws light on the energy scenario in India and globally, impact of energy on economic development and the need for renewable energy sources.

- Energy resources and consumption in residential, commercial and institutional sector; relationship between energy and environment
- Role of energy in economic development and social transformation
- Energy sources, overall energy demand and availability
- Depletion of energy sources and its impact, need for renewable sources of energy
- Energy use and global climate change, GHG emissions, climate change debate

UNIT II: Energy Systems and Technologies 8 Hours

This unit focuses on present status and future prospects of various energy sources. It also focuses on the different conventional and renewable sources of energy.

- Conventional energy sources: sources, issues and challenges, applications, current status, advantages and disadvantages, technologies, future prospects
- Non-conventional energy sources: need, sources, current status, significance, technologies, applications, challenges and opportunities

UNIT III: Energy policy, legislative framework and energy strategy 7 Hours

This unit throws light on the Indian and global energy policy scenario.

- History of energy policy, International Energy Policies, international treaties and protocols
- Legislations guiding energy sector in India
- Energy Policy Issues
- Power sector reforms, restructuring of energy supply sector, energy strategy for future.

UNIT IV: Energy Conservation and Auditing **8 Hours**

This unit throws light on energy conservation, energy audit and management.

- Energy conservation measures across different consumer segments, benefits of energy conservation on economy and environment
- Challenges faced in energy conservation
- Techniques and strategies for reducing and managing energy use across industrial, commercial, agricultural, and domestic sectors
- Energy audits, technologies used in auditing, structure and components of energy audit reports

PRACTICAL

(Credit 2; Hours: 60)

- Conducting energy audits, optimizing energy usage in commercial, institutional and residential units through energy efficiency and use of renewable energy
- Government initiatives in renewable energy, legislative framework in the energy sector - Analysis through policy implementation, feedback from stakeholders etc.
- Calculation of solar rooftop potential using various applications/websites
- Energy conservation and efficiency - Analysis of the current scenario through primary and secondary review etc.
- Designing/developing and conducting training/awareness generation programme on energy management/renewable energy for different target groups
- Renewable energy project management through softwares

Essential Readings:

UNIT I:

- Yang, P. (2024). *Renewable Energy: Challenges and Solutions.* Springer.
- Paritosh, & Jain, A. (2023). *Energy Scenario in India*. Book World.

UNIT II:

- Deo, P., Chatterjee, S. K., & Modak, S. (2024). *Renewable Energy in India: Economics and Market Dynamics.* Atlantic Publishers & Distributors.
- Raj, D., Verma, A. K., Singh, A., & Kulkarni, A. (2024). *A Text Book Of Renewable Energy & Green Technology.* Book Rivers.
- Bollin, E. (2023). *Using Renewable Energies in Buildings: Heating and Cooling Supply, Automation, Executed Examples.* Springer.

UNIT III:

- Mital, M., & Gupta, P. (Eds.). (2025). *Environmental Studies: Resources and Sustainability - A Textbook and Practical Manual.* Elite Publishing.
- Sharma, A. (2024). *India's Quest for Energy Security: India's Roadmap to becoming an Energy Independent Nation.* Notion Press.
- Thapar, S. (2024). *Renewable Energy: Policies, Project Management and Economics.* Springer.

UNIT IV:

- Saxena, B. (2024). *Essentials Of Energy Management and Audit*. BFC Publications Pvt Ltd
- Sethuraman, A. (2020). *Practical Guide to Energy Conservation & Management.* Notion Press.

Suggested Readings:

- Kanoglu, M., Cengel, Y. A., & Cimbala, J. M. (2020). *Fundamentals and Applications of Renewable Energy.* McGraw Hill.
- International Energy Agency (2017). *Energy Technology Perspectives 2017.* Paris, International Energy Agency.
- Kothari, P., Singal, K. C., & Ranjan, R. (2008). *Renewable Energy Sources and Emerging Technologies.* PHI Pvt. Ltd.: New Delhi.
- Kishore, V. V. N. (2008). *Renewable energy engineering and technology – A knowledge compendium.* TERI Press: New Delhi.

- Kreith, F., & Yogi Goswami D. (2007). *Handbook of Energy Efficiency and Renewable Energy*. CRC Press.

Journal Articles (highly cited and relevant)

- Bhattacharyya, S. C. (2018). India's energy policies: Past, present, and future. *Energy Policy*, *117*, 303–318.
- Kumar, A., Gaur, S., & Kr, M. (2010). Renewable energy in India: Current status and future potentials. *Renewable and Sustainable Energy Reviews*, *14*(8), 2434–2442.
- Bhandari, D., Bansal, S., & Baveja, S. (2018). The perform, achieve and trade scheme in India: An effectiveness analysis. *Renewable and Sustainable Energy Reviews*, *96*, 387–396.
- Thapar, S., & Verma, A. (2016). Economic and environmental effectiveness of renewable energy policy instruments: Best practices from India. *Renewable and Sustainable Energy Reviews*, *66*, 487–498.
- Purohit, I., & Purohit, P. (2019). Wind energy development and policy in India: A review. *Energy Policy*, *125*, 302–321.
- Painuly, J. P. (2006). A review of energy conservation initiatives by the Government of India. *Energy Policy*, *34*(18), 3769–3782.

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

DISCIPLINE SPECIFIC ELECTIVE
ERGONOMICS AND OCCUPATIONAL SAFETY MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Ergonomics and Occupational Safety Management	**4**	**3**	**0**	**1**	**As per admission norms**	**Nil**

Learning Objectives

- Understand the principles of human-machine systems and their role in optimizing worker performance and safety.
- Analyze the impact of work posture and stress on health, productivity, and ergonomics.
- Learn techniques for ergonomic task analysis, risk assessment, and hazard management in the workplace.
- Explore modern trends in occupational safety, ergonomic design, and strategies to reduce health risks.
- Understand the integration of health regulations and ergonomic practices to enhance worker well-being and safety.

Learning Outcomes

- Demonstrate understanding of human-machine systems and how to align tasks with human capabilities to reduce strain.
- Analyze the impact of occupational stress, work posture, and ergonomic risk factors on health and productivity.
- Apply ergonomic task analysis and risk assessment techniques to identify and manage workplace hazards.
- Explore modern trends in ergonomics, focusing on stress reduction, posture improvement, and long-term health benefits.
- Understand occupational safety and health regulations and how ergonomic design enhances worker protection and compliance with standards.

THEORY

(Credits 3; Hours 45)

UNIT I: Occupational Stressors in the Workplace 15 Hours

This unit focuses on identifying workplace stressors at home, office and industrial setups, understanding MSDs and their causes, and examining safety practices guided by OSHA and NIOSH.

- Occupational stress -Physical Discomfort and Strain, Environmental Stressors, Mental and Emotional Stress, Organizational Factors
- Musculoskeletal Disorders (MSDs) in the Workplace: Definition, Types, and Causes
- Preventing Musculoskeletal Disorders (MSDs) in the Workplace-
  -Health monitoring protective equipment
  -safe work practices
  -safety of equipment
- Occupational safety analysis-OSHA, NIOSH

UNIT II: Ergonomic Factors and Workstation Design 10 Hours

This unit provides an overview of ergonomic design elements, risks associated with poorly designed workstations, and approaches to creating safer, more

efficient work environments.

- Ergonomic factors in the design of workplace, equipment and tools, Influence of ergonomic design on worker health and productivity, Hazards associated with poor designed workstations
- Strategies for improving workstation and equipment design for optimal comfort and safety

UNIT III: Kinesiological and Biomechanical Concepts in Work Posture 12 Hours

This unit covers the fundamentals of kinesiology and biomechanics, the importance of proper work posture, and the types of postures for various occupational tasks.

- Kinesiology and biomechanics, human leverage system and its mechanical benefits
- Importance of proper work posture
- Types of work postures for various tasks
- Application of biomechanics in occupational safety- to prevent accidents and reduce physical stress on workers.

UNIT IV: Risk Assessment in Occupational Ergonomics 8 Hours

This unit deals with applying subjective and objective ergonomic assessments to improve worker posture, safety, and efficiency.

Subjective and objective assessment- Postural analysis tools (REBA (Rapid Entire Body Assessment), RULA (Rapid Upper Limb Assessment), and OWAS (Ovako Working Posture Analysis System), WERA (Workplace Ergonomics Risk Assessment)

PRACTICAL

(Credits 1; Hours 30)

1. Task analysis for the selected occupation

   - Identify and describe the specific tasks involved in the selected occupation

   -Task Categorization -physical demands (e.g., sitting, standing, lifting), mental effort (e.g., decision-making, problem-solving), and repetitive

actions (e.g., typing, data entry).

-Task Duration and Frequency

-Tools and Equipment required to perform the task

2. Postural and Risk Assessment

   -Observe and document the postures that user adopt while performing each task

   -Use postural evaluation tools such as (REBA (Rapid Entire Body Assessment), RULA (Rapid Upper Limb Assessment), and OWAS (Ovako Working Posture Analysis System),WERA (Workplace Ergonomics Risk Assessment) to objectively assess the risk of musculoskeletal disorders (MSDs) related to posture.

3. Designing workstation/equipment based on ergonomic assessment and Occupational safety analysis of the selected workplaces
4. Design OSHA/NIOSH safety and health checklist

Essential Readings

UNIT I:

This unit focuses on identifying workplace stressors at home, office and industrial setups, understanding MSDs and their causes, and examining safety practices guided by OSHA and NIOSH.

- Sarma, A. M. (2025). *Occupational health and safety at work*. Himalaya Publishing House.
- Satapathy, S., Realyvásquez Vargas, A., & Mishra, M. (2023). *Occupational Health Safety Factors and Their Impact on the Mental Health of Workers*. Springer Singapore.
- Bridger, R. (2017). *Introduction to Human Factors and Ergonomics*. CRC Press.

UNIT II:

This unit provides an overview of ergonomic design elements, risks associated with poorly designed workstations, and approaches to creating safer, more efficient work environments.

- Salvendy, G. (2012). *Handbook of Human Factors and Ergonomics*. John Wiley & Sons.
- Tosi, F. (2019). *Design for Ergonomics*. Springer Nature.

- Steidl, R.E. & Bratton, E.C. (1968). *Work in the Home*. John Wiley & Sons Inc.

UNIT III:

This unit covers the fundamentals of kinesiology and biomechanics, the importance of proper work posture, and the types of postures for various occupational tasks.

- Koley, S. (2024). *Textbook of biomechanics*. AITBS Publishers, India.
- G, P. Kumar, & De Souza, I. G. (2022). *Textbook of biomechanics & kinesiology: Detailed analysis of musculoskeletal structure and function*. Jaypee Brothers Medical Publishers.
- Chakrabarti, D. (1997). *Indian Anthropometric Dimensions for Ergonomic Design Practice*. National Institute of Design.

UNIT IV:

This unit deals with applying subjective and objective ergonomic assessments to improve worker posture, safety, and efficiency.

- Mukhopadhyay, P. (2022). *Ergonomics principles in design: An illustrated fundamental approach*. CRC Press/Taylor & Francis Group.
- Ray, P. K., & Maiti, J. (Eds.). (2018). *Ergonomic design of products and worksystems: 21st century perspectives of Asia*. Springer.

Suggested Readings:

- Hedge, A. (2016). *Ergonomic Workplace Design for Health, Wellness, and Productivity*. CRC Press.
- Stanton, N. A., Hedge, A., Brookhuis, K., Salas, E., & Hendrick, H. W. (2004). *Handbook of Human Factors and Ergonomics Methods*. CRC Press.
- Helander, M. (2005). *A Guide to Human Factors and Ergonomics* (2nd ed.). CRC Press.

  Shorrock, S., & Williams, C. (2016). *Human Factors and Ergonomics in Practice: Improving System Performance and Human Well-Being in the Real World*. CRC Press.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

POLICIES AND TECHNOLOGIES FOR WASTE MANAGEMENT

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Policies and Technologies for Waste Management	**4**	**2**	**0**	**2**	**As per admission norms**	**Nil**

Learning Objectives

- To understand the problems different types of wastes
- To gain insights into various aspects of waste management
- To understand the policy structure for waste management in the country
- To learn about the environment and health impacts of waste mismanagement

Learning Outcomes

After completing the course, students will be able to:

- Understand the problems associated with wastes
- Understand the various aspects of waste management
- Understand the policy framework for waste management in India
- Understand the environment and health impacts of waste mismanagement

THEORY

(Credits 2; Hours 30)

UNIT I: Waste management: Global and Indian Scenario 7 Hours

This unit throws light on the waste generation scenario in India and globally, and

its impact on environment and health.

- Definition, Types and Categories of Waste
- Sources and types of waste in different countries, associated challenges
- Quantum of waste generated globally and in India
- Need and importance of waste management for homes, institutions, industries and commercial establishments

UNIT II: Policy and Legislative Framework Waste Management 8 Hours

This unit throws light on the Indian and global waste policy scenario.

- International policy scenario for waste management
- Waste management rules in India for MSW, Biomedical waste, e-waste and other hazardous wastes in India
- Extended producer responsibility (EPR)
- Circular Economy and its benefits, Case studies

UNIT III: Technologies for Waste Management 8 Hours

This unit focuses on various technologies for waste management.

- Classification, present scenario of disposal technologies used for waste management
- Waste prevention and 7Rs principles
- Sources, composition, properties, management technologies for different types of wastes – Municipal Solid Waste (MSW), waste water, biomedical waste, hazardous waste, e-waste, industrial waste, agricultural waste, C&D waste, plastic waste, nuclear waste etc.
- Bio-waste – Definition, physicochemical characteristics, sourcing, issue of waste segregation and packaging, food waste, composting technologies, anaerobic digestion (biogas), bio-fuels
- Energy recovery from wastes – RDF, waste to energy plants etc.
- Innovations in waste management

UNIT IV: Environmental and Health Impacts of Waste Mismanagement 7 Hours

This unit explains how improper waste disposal affects ecosystems and human wellbeing.

- Air, water, and soil pollution from open dumping and burning
- Health risks to waste workers, ragpickers, and nearby communities
- Spread of infectious diseases from biomedical and mismanaged waste
- Long-term ecological impacts: contamination of groundwater, biodiversity loss, and toxic exposure

PRACTICAL

(Credit 2; Hours: 60)

- Government initiatives on waste management – Analysis through policy implementation, feedback from stakeholders etc.
- Legislative framework in the waste management sector – Critical analysis with focus on different types of wastes, current market scenario etc.
- Initiatives towards Extended Producer Responsibility (EPR) – Analysis of the current scenario through primary and secondary review etc.
- Designing/developing and conducting training/awareness generation programmes on waste management for different target groups
- Management technologies and innovations for managing different types of wastes in commercial, institutional and residential units – Analysis, review and generation of innovative ideas etc.

Essential Readings:

UNIT I:

- Bhatia, S. (2023). *Solid and Hazardous Waste Management*. Atlantic Publishers and Distributors.
- Natesan, U., & Sumathi, V. R. (2021). *Solid Waste Management in an Indian Scenario*. Grin Verlag.

UNIT II:

- Mital, M., & Gupta, P. (Eds.). (2025). *Environmental Studies: Resources and Sustainability - A Textbook and Practical Manual.* Elite Publishing.

- Sinha, G. N. (2024). *E-Waste Management: Governance and Policy Options.* M/s Bishen Singh Mahendra Pal Singh.
- Ghosh, S. K., Samanta, S., Hirani, H., & Vieira da Silva, C. R. (2022). *Effective Waste Management and Circular Economy: Legislative Framework and Strategies (The Circular Economy in Sustainable Solid and Liquid Waste Management).* CRC Press.

UNIT III:

- Sarkar, R. R. (2023). *Waste to Energy Efficient Municipal Solid Waste Management.* Abhijeet Publications.
- Rathoure, A. K. (2021). *Sustainable Practices for Waste Management.* Discovery Publishing House Pvt. Ltd.
- Panda, H. (2019). *Biomedical Waste: Management, Recycling and Applications.* Discovery Publishing House Pvt. Ltd.

UNIT IV:

- Marfe, G, & Stefano, C. D. (2020). *Risks and Challenges of Hazardous Waste Management: Reviews and Case Studies.* Bentham Science Publishers.

Suggested Readings:

- Cherry, P. M. (2016). *Solid and Hazardous Waste Management*. CBS HB.
- Bhatt, M. S. (2012). *Solid Waste Management: An Indian Perspective.* Synergy Books India.
- Srivastava, M. L. (2012). *Waste Management.* Random Publications.
- Ramachandra, T. V. (2009). *Management of Municipal Solid Waste*. The Energy and Resources Institute.

Journal articles (High Citation Count & Broad Overview)

1. Wilson, K. V., Williams, L. M., Kemp, S. L., Smith, A. D. C., Murphy, S., & Smith, M. P. (2017). Challenges and opportunities associated with waste management in India. *Royal Society Open Science*, *4*(3), 160764.

2. Dwivedy, M., & Mittal, R. K. (2017). Assessment of legislation and practices for the sustainable management of waste electrical and electronic equipment in India. *Renewable and Sustainable Energy Reviews*, *76*, 1245–1254.
3. Prabhakar, A. K., Dong, J. J., & Mees, A. (2022). Plastic waste management in India: Challenges and opportunities. *Sustainability*, *14*(18), 1167.
4. Kamble, S. S., Gunasekaran, A., Gawankar, S. A., & Manupati, V. K. (2023). Smart waste management 4.0: The transition from a systematic literature review on the role of industry 4.0 technologies to a framework for smart waste management. *Waste Management*, *165*, 247–263.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
PROFESSIONAL DESIGN METHODS & START-UPS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Professional Design Methods & Start-Ups	**4**	**3**	**0**	**1**	**As per admission norms**	**Nil**

Learning Objectives

- To introduce students to professional ethics, design practices, and the importance of Intellectual Property Rights (IPR) in design
- To equip students with the knowledge and skills required to conceptualize, initiate, and manage a startup
- To provide an understanding of financial planning, marketing strategies, and branding for design startups
- To develop students' ability to create a professional design portfolio, prepare a business model, and engage in startup simulations
- To prepare students for real-world design challenges through industry observation and practical exercises.

Learning Outcomes

After completing this course, students will be able to:

- Understand the significance of startups and how to identify business opportunities
- Understand professional ethics, design standards, and IPR in design
- Develop skills to conceptualize, analyze, and initiate a startup
- Build a professional design portfolio and pitch startup ideas
- Apply industry insights through observation and hands-on simulation

exercises.

THEORY

(Credits 3; Hours 45)

UNIT I: Foundations of Professional Design Practices and Intellectual Property Rights 12 Hours

This unit focuses on professional design practices, real-world project experience, industry collaboration, and safeguarding creative work through Intellectual Property Rights.

- Collaborating with design-related industries (interior, event, landscape, facilities, product development, furniture, upcycling/recycling), focusing on manpower, guidance, product strategies, and design approaches.
- Engaging with real-life projects
- Developing a future-oriented project with commercial potential for a specific industry.
- Building a professional network with relevant industries.
- Understanding the significance and procedures of Intellectual Property Rights (IPR)**,** including patents, copyright, industrial designs, trademarks, service marks, layout designs of integrated circuits, and geographical indications.
- Applying for appropriate IPR to safeguard designs from plagiarism

UNIT II: Initiating a Design Startup 10 Hours

This unit delves into exploring viable design startup ideas, assessing feasibility, and building a comprehensive professional portfolio.

- Exploring a startup idea or business opportunity through market analysis and understanding consumer needs, including:
  - Developing viable concepts through ideation, conceptualization, and innovation
  - Assessing feasibility in terms of technology, market potential, financial viability, and human resources
- Developing a personal and professional portfolio that reflects technical skills, as well as social, economic, and environmental considerations.

UNIT III: Marketing, and Branding for Design Startups 15 Hours

This unit highlights marketing, branding, organizational structure, startup registration, problem-solving, and government support for design startups.

- Marketing and branding: market segmentation, USP, brand building
- Identifying structure for the startup organization: sole proprietorship, partnership, limited company, co-operative, franchise or social enterprises
- Identifying challenges and solving problems for a successful startup
- Registration process: selecting a company name, acquiring digital signature certificate (DSC) and Director Identification Number (DIN), filling relevant forms with supporting documents, registration of the startup
- Government programmes and policies supporting startups

UNIT IV: Financial Planning for Design Startups 8 Hours

This unit covers financial planning, cost estimation, funding sources, legal compliance, and business plan development for design startups.

- Preparing cost estimates for technical, manpower and other resources; recurring and non-recurring; rate of return and break-even analysis; overheads / operational costs
- Financial analysis, support systems and funding: sources of funding, costing and budgeting, formal and informal sources of support, networking
- Legal & ethical compliance: regulations, taxation, business ethics
- Writing a business plan

PRACTICAL

(Credits 1; Hours 30)

1. Interacting with design-related industries (interior products, event design and decor, landscape design, facilities and services management, new product development, furniture design, upcycling, refurbishing, recycling, etc.)
2. Engaging with real-life projects

3. Developing a future project with commercial potential
4. Building a network of collaboration with relevant industries
5. Developing a personal and professional portfolio
6. Enhancing professional skills for presenting design projects
7. Reviewing success stories of startups and enterprises.
8. Preparing a comprehensive business plan for a startup, including financial analysis, legal and ethical compliance, marketing, and branding
9. Registering the startup
10. Executing the startup project

Essential Readings

UNIT I:

This unit focuses on professional design practices, real-world project experience, industry collaboration, and safeguarding creative work through Intellectual Property Rights.

- Ramkumar, M., & Jayakumar, A. (Eds.) (2022). *Intellectual property rights demystified*. New India Publishing Agency.
- Babel, R. (2021). *Laws relating to intellectual property rights in India*. Bloomsbury Professional India.

UNIT II:

This unit delves into exploring viable design startup ideas, assessing feasibility, and building a comprehensive professional portfolio.

- Taneja, H., & Lahiri, S. (2021). *Design thinking for startups: An actionable guide for building innovative businesses*. Wiley.
- Brown, T., & Katz, B. (2020). *Change by design: How design thinking creates new alternatives for business and society* (Revised ed.). Harper Business.
- Soota, A., & Gopalan, S. R. (2021). *Entrepreneurship simplified: From idea to IPO*. Penguin Portfolio.

UNIT III:

This unit highlights marketing, branding, organizational structure, startup registration, problem-solving, and government support for design startups.

- Anantham, M. (2025). *Company Registration: Starting Up in India — A Step- by- Step Guide*. Self- Published/India Business Press.
- Binns, S. (2021). *Building the future: Big team, big ideas, small startups, and how to make them work*. Wiley
- Blank, S., & Dorf, B. (2020). *The startup owner's manual: The step-by-step guide for building a great company* . K&S Ranch.

UNIT IV:

This unit covers financial planning, cost estimation, funding sources, legal compliance, and business plan development for design startups.

- Kawase, M. (2022). *Financial planning for startups: A hands-on guide to launching and managing your business finances*. Routledge.
- Gandhi, S. (2021). *Indian Startups, SMEs, & Financial Literacy: Business finance basics entrepreneurs must know*. Notion Press Media Pvt Ltd

Suggested Readings:

- O'Reilly, C. A., & Tushman, M. L. (2021). *Lead and disrupt: How to solve the innovator's dilemma*. Stanford Business Books.
- Wheeler, A. (2022). *Designing brand identity: An essential guide for the whole branding team* (6th ed.). Wiley.
- Klein, D. (2021). *AI and automation for business growth: Leveraging technology to scale your startup*. Springer.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

INTEGRATING SUSTAINABLE DEVELOPMENT IN PRACTICE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Integrating Sustainable Development in Practice	**4**	**2**	**0**	**2**	**As per admission norms**	**Nil**

Learning Objectives

- To develop an understanding of the integrated and systems-based approach to sustainable development
- To impart skills in applying sustainability frameworks to real-world challenges
- To empower students to design, implement, and evaluate practical sustainability interventions
- To enhance competencies in multi-stakeholder engagement, communication, and evidence-based decision making

Learning Outcomes

After completing the course, students should be able to:

- Understand the connections between social, economic, and environmental issues, and how integrated approaches can address them
- Evaluate the role of various local, national, and international frameworks that drive sustainability transitions
- Apply integrated development approaches to analyse, design, and evaluate sustainability solutions.
- Work effectively with communities, networks, and stakeholders to drive sustainable change.

THEORY
(Credits 2; Hours 30)

UNIT I: Foundations of Sustainable Development in Practice 7 Hours

This unit covers an understanding of integrated sustainable development by linking systems thinking, interdependencies, and cross-sectoral approaches.

- Revisiting Sustainability- from theory to practice
- Interlinkages and inter-dependence between social, economic and environmental issues- Concept of integrated approach to sustainable development
- Case examples of sustainability practice in India and globally

UNIT II: Tools and Methods for Analysing Sustainability Issues 8 Hours

This unit explores practical tools used across sustainable development projects that translate theory into field-level action.

- Problem Tree, Objective Tree, and Causal Analysis
- Stakeholder analysis and mapping
- Synergies and trade-offs assessment
- Baseline studies and rapid rural/urban appraisal
- Prioritising issues and identifying entry points for action

UNIT III: Challenges and Opportunities for Sustainability Solutions 8 Hours

This unit focuses on turning analysis into action. It introduces solution design for real-world challenges and teaches students to plan interventions.

- Drivers and barriers in adopting an integrated approach to sustainable development, such as policy silos, resource constraints, competing priorities, and measuring outcomes
- Opportunities for integration, such as emerging technologies, innovation, public-private partnerships, traditional knowledges, good practices around the globe, etc.
- Approaches: low-carbon development, circular economy, green livelihoods, climate adaptation
- Communicating sustainability to influence behaviour and policy

UNIT IV: Institutionalizing and Monitoring Sustainability 7 Hours

This unit outlines how sustainability practices are embedded within organisations and systems. It highlights processes for integrating sustainability into planning, governance, and decision-making, and introduces methods for tracking and reporting sustainability performance.

- Mainstreaming sustainable development issues into planning processes
- Strategic framework and process for integrated sustainable development-institution building, analysis, creating dialogue, planning, communicating, financing, implementing and monitoring
- Monitoring and evaluation for tracking progress in sustainability projects: characteristics of effective monitoring, challenges.
- National and global reporting systems (NIF, SDG Index, Voluntary National Reviews)

PRACTICAL
(Credits 2; Hours 60)

1. **Community-Based Sustainability Diagnosis:** Study one sustainability issue in a community/campus, map SDG links, and identify gaps to be addressed. Record baseline data for indicators like Waste: bags/day, overflow count/day, segregation accuracy %;
   Water: leak points count, tanker frequency, tap wastage observations;
   Mobility: vehicles/hour, parking occupancy %, average commute time;
   Livelihood: days of work/week, income variability score, access barrier count

2. **Designing a Sustainability Intervention**: Develop an intervention plan for a sustainability challenge. Include solution options, behavioural strategies, resource needs, risk analysis, and expected outcomes. Use ToC or Results Framework for design clarity. It may focus on waste reduction, water conservation, energy efficiency, campus sustainability, or a community-based initiative.

3. **Implementation of sustainability intervention-** Implement a small-scale sustainability intervention designed in the earlier practical sessions. Carry out planning, mobilisation, and execution steps; document processes; collect simple before–and–after observations or feedback; and reflect on challenges, outcomes,

and learning. A short implementation report and presentation will summarise the experience.

4. **Communication for Sustainable Development:** Create a communication product (poster, video, social media content, campaign kit) for a sustainability issue. Identify audience, key messaging, and behaviour-change components. Review campaign effectiveness using simple indicators.

5. **Stakeholder Engagement:** Conduct stakeholder profiling for a sustainability project. Prepare an interest–influence matrix and propose engagement strategies. Analyse potential conflicts, partnerships, and opportunities.

Essential Readings:

UNIT I

- Ghosh, J. (2022). *The making of a sustainable economy: Policies for India's future*. Penguin Random House India.
- Prakasam, N. (2023). *Back to Bharat: In search of a sustainable future*. Penguin Random House India Private Limited.
- United Nations Development Programme (2024). UNDP Sustainable Development Report: Practical pathways for accelerating the SDGs. UNDP Publishing.
- Whitby, A. (2019). *Advancing education for sustainable development: key success factors for policy and practice*. World Future Council Foundation.

UNIT II

- Dhamija, A., Misra, N., & Gogoi, I. S. (2019). *Project logical framework workbook for strategic planning of urban projects (Project logical framework workbook)*. National Institute of Urban Affairs (CITIIS).
- Khosla, A., & Sethi, M. (Eds.). (2023). *Sustainable development in India: Pathways, practices, and policy innovations*. Oxford University Press.
- Ramachandra, T. V., & Sudhira, H. S. (2023). *Sustainable urban planning in India: Integrating environment, economy, and society*. Routledge India.

UNIT III

- Gupta, D. (2025). *Framing India's low carbon development pathways*. Cambridge University Press.

- Nagendra, H., & Mundoli, S. (2023). *Shades of blue: Connecting the drops in India's cities*. Penguin Random House India.

UNIT IV

- Basu, D., Adhikary, M. M., & Biswas, D. (2007). *Participatory monitoring and evaluation of development programmes: Practitioners' guide*. Agrotech Publishing Academy.
- Dhamija, A., Misra, N., & Gogoi, I. S. (2019). *Project logical framework workbook for strategic planning of urban projects* . National Institute of Urban Affairs (CITIIS).
- Karnam, G. (2022). *Public expenditure in India: Policies and development outcomes*. Oxford University Press.
- Sidana, N. (2025). *Viksit Bharat@2047*. Bloomsbury Quest (Bloomsbury Publishing India Pvt. Ltd.).

Suggested Readings

- Blewitt, J. (2023). *Understanding sustainable development (4th ed.).* Routledge.
- Swilling, M., Hajer, M., & Baynes, T. (2023). *Sustainability transitions in practice.* Edward Elgar.
- Steve Bass, David H. Smith and Michael Stanley-Jones (2023). *Sustainable Development in Practice: Integrating Environment, Climate and Poverty Reduction.* United Nations Development Programme–United Nations Environment Programme Poverty-Environment Action: Nairobi.
- Lee, N. and C. Kirkpatrick (Eds). 2000. *Integrated Appraisal and Sustainable Development in a Developing World.* Cheltenham, Edward Elgar.

Journal Articles

- Bandari, R., et al. (2024). *Transdisciplinary approaches to local sustainability and SDGs.* Sustainability Science, *19*, 1293–1312.
- Lella, L., Oses-Eraso, N., & Stamos, I. (2024). *SDG monitoring frameworks for regions.* Ecological Indicators, *166*, 112248.
- Sreenivasan, A., Suresh, M., & Nedungadi, P. (2023). *AHP research linked to SDGs*. Heliyon, 9, e19077.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
DESIGN PROCESSES IN BUILT SPACES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Design Processes in Built Spaces	**4**	**2**	**0**	**2**	**As per admission norm**	**Nil**

Learning Objectives

- Examine methods for urban context analysis, site zoning, microclimate study, and comprehensive movement planning in built environments.
- Cover essential building specifications, NBC requirements, and detailed design parameters for inclusive, universally accessible commercial and residential spaces.
- Outline the processes of project estimation, including material specifications, preparing proposals, managing site sourcing, budgeting strategies, and meeting deadlines.
- Examine the principles of waste management hierarchy, strategies for urban environments, and application of sustainable design for efficient waste handling systems.

Learning Outcomes

The students would be able to:

- Analyze urban context, topographical constraints, and microclimates to develop universally accessible movement and access plans for the built site.

- Apply NBC and Master plan standards to specify building requirements for residential and commercial projects, including specialized retail and event spaces.
- Prepare comprehensive project estimates, define material specifications, manage site sourcing/outsourcing, and document financial records for the construction process.
- Design and implement design solutions for waste management, applying the waste hierarchy and urban planning strategies to minimize environmental impact.

THEORY

(Credits 2; Hours 30)

UNIT I: Urban Site Planning and Contextual Design 8 Hours

This unit focuses on analysing the urban environment, understanding site constraints, and integrating design solutions that respond to the wider community and infrastructure.

- Urban Context Analysis: Site Selection Criteria, Microclimate Analysis, Site Zoning, and Land Use.
- Site Design and Constraints: Topographical Planning, Utility Integration, Environmental Constraints.
- Movement and Access Planning: Traffic and Pedestrian Flow, Parking Strategy, Universal Accessibility at the Site Level
- Placemaking and Landscape Architecture: Open Space Design, Landscape Strategy,
- Boundary and Edge Conditions

UNIT II: Building Specifications 7 Hours

This unit focuses on the technical and regulatory aspects of spatial design, covering the development of detailed plans for residential and commercial spaces.

- Building specifications for residential and commercial space design as per NBC, and Master plan
- Specific requirements for designing retail spaces - offices & showrooms

- Space planning for selected events - exhibitions and expos, seminars and conferences areas.
- Design parameters for creating universal spaces with focus on inclusivity (people with special needs, elderly, infants and children).

UNIT III: Project Estimation **8 Hours**

This unit teaches the essential skills for managing the financial and logistical aspects of a design or construction project, ensuring its successful implementation.

- Specifications of materials
- Estimating & budgeting: Types of cost estimations and preparing estimates and budgets
- Proposals & tenders
- Site management - Sourcing/ outsourcing
- Implementation of plan of work and meeting deadlines
- Record keeping & filing

UNIT IV: Waste Management in Urban Spaces **7 Hours**

This unit provides an in-depth look at the principles, strategies, and design applications for managing waste effectively in urban environments.

- Specifications of materials
- Introduction to Waste Management in Urban Environments
- Waste Management Hierarchy and Strategies
- Urban Planning and Waste Management
- Design Applications for Waste Management
- Future Directions and Research

PRACTICAL

(Credits 2; Hours 60)

1. Preliminary Residential Design: Apply building specifications and design principles to create a preliminary architectural design for a residential building.

2. Commercial Space Layout: Design a commercial space (e.g., a retail store, a restaurant, or an office) focusing on specific design requirements and optimizing customer flow.
3. Event Layout Planning: Plan and design the layout for a specific event (e.g., an exhibition, a conference, or a seminar) considering spatial needs and logistics.
4. Small-Scale Cost Estimation: Prepare a detailed cost estimate for a small-scale construction project (e.g., a residential extension or a small commercial building).
5. Project Documentation Development: Develop and maintain all required project documentation for a simulated construction project, ensuring accuracy and completeness.
6. Construction Waste Practice Analysis: Analyze and document the waste management practices currently implemented at a local construction site.
7. Commercial Waste Practice Analysis: Analyze and document the waste management practices currently implemented at a commercial establishment.
8. Sustainable Design Element Creation: Design a sustainable design element to be integrated into either an existing building or a proposed project.
9. Event Waste Minimization Plan: Develop a waste minimization plan specifically tailored for a particular event or planned activity.
10. Activity Waste Minimization Plan: Develop a waste minimization plan for a generic specific activity not related to a construction site or commercial establishment.

Essential Readings

UNIT I:

This unit focuses on analysing the urban environment, understanding site constraints, and integrating design solutions that respond to the wider community and infrastructure.

- DeKay, M., & Brown, G. Z. (2014). *Sun, wind, and light: Architectural design strategies* (3rd ed.). Wiley.

- Gehl, J. (2011). *Life between buildings: Using public space*. Island Press.

- Lynch, K., & Hack, G. (1984). *Site planning* (3rd ed.). MIT Press.
- Waldheim, C. (2016). *Landscape as urbanism: A general theory*. Princeton University Press.

UNIT II:

This unit focuses on the technical and regulatory aspects of spatial design, covering the development of detailed plans for residential and commercial spaces.

- Buxton, P. (Ed.). (2021). *Metric handbook: Planning and design data* (7th ed.). Routledge.
- Bureau of Indian Standards. (2016). *National building code of India 2016* (Part 3 & 4).
- Central Public Works Department. (2016). *Harmonised guidelines and space standards on barrier free built environment for persons with disability and elderly persons*. Ministry of Urban Development, Government of India.
- Delhi Development Authority. (2021). *Master plan for Delhi - 2041*.
- Ministry of Urban Development. (2014). *Urban and regional development plans formulation and implementation (URDPFI) guidelines* (Vol. 1). Government of India.
- Uzodimma, C., & Nwanegbo, G. T. (2023). Space efficiency and circulation: Parameters for a functional convention centre in international markets. *International Journal of Innovative Environmental Studies Research*, *11*(3), 23–27.

UNIT III:

This unit teaches the essential skills for managing the financial and logistical aspects of a design or construction project, ensuring its successful implementation.

- Duggal, S. K. (2017). *Building materials* (5th ed.). New Age International.
- Gupta, M. K. (2024). *Practical handbook on building construction* (Reprint 2025). Khanna Publishers.
- *Note: In APA 7, use the actual publication year (2024) even if the marketing/reprint refers to 2025.*
- Lewis, H. (2020). *Bids, tenders & proposals: Winning business through best practice* (6th ed.). Kogan Page.
- Rowlinson, S. (Ed.). (2019). *The Routledge handbook of construction project procurement and delivery*. Routledge.
- Royal Institute of British Architects. (2020). *RIBA plan of work 2020 overview*. RIBA Publishing. https://www.architecture.com/knowledge-and-resources/resources-landing-page/riba-plan-of-work

UNIT IV:

This unit provides an in-depth look at the principles, strategies, and design applications for managing waste effectively in urban environments.

- Anagnostopoulos, C., Zaslavsky, A., & Medvedev, A. (2017). Waste management in the smart city: Current practices and future directions. *Smart Cities, 1*(1), 1–15. https://doi.org/10.3390/smartcities1010001.
- Connett, P. (2013). *The zero waste solution: Untrashing the planet one community at a time*. Chelsea Green Publishing.
- Ghosn, R., & Jazairy, E. H. (2015). *Geographies of trash*. Actar.
- Kumar, S. (Ed.). (2016). *Municipal solid waste management in developing countries*. CRC Press.
- Ministry of Environment, Forest and Climate Change. (2016). *Solid waste management rules, 2016*. Government of India.
- Webster, K. (2017). *The circular economy: A wealth of flows* (2nd ed.).

Ellen MacArthur Foundation Publishing.

Suggested Readings

- Meredith, J. R., & Shafer, S. M. (2020). *Project management in practice* (7th ed.). Wiley.
- Mislick, G. K., & Nussbaum, D. A. (2015). *Cost estimation: Methods and tools*. John Wiley & Sons.
- DeChiara, J., Panero, J. & Zelnik, M. (2011). Time Saver Standards for Building types, second edition. McGraw-Hill Education

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

DISCIPLINE SPECIFIC CORE

TECHNIQUES OF RESEARCH WRITING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Techniques of Research Writing	**2**	**2**	**0**	**0**	**Should be aware of Advanced Research Methodology and Statistical Tools for Research.**	**Nil**

Learning Objectives

- Comprehend and apply principles of academic writing for research
- Understand the concept of plagiarism and adopt strategies to avoid plagiarism.
- Learn and use different citation styles and effectively utilize reference management tools.
- Outline the process of writing, publishing, and presenting research.
- Avoid common errors in academic writing.

Learning Outcomes

After completing the course, students will be able to:

- Structure and organize major scholarly works according to disciplinary standards.
- Master the principles of academic writing and non-plagiaristic expression.
- Employ visualization techniques to effectively communicate complex research findings and data patterns.
- Apply citation styles and formatting requirements meticulously to produce publication-ready manuscripts.

THEORY
(Credits 2; Hours 30)

UNIT I: The Foundations of Scholarly Writing **8 Hours**

This unit covers the essentials of clear, concise, and formal academic writing, ethical practices including plagiarism avoidance, effective idea organization, and responsible use of AI tools in research.

- Academic Writing: Clarity, conciseness, precision, and formality.
- Avoiding Plagiarism: Proper paraphrasing and summarizing techniques; self-plagiarism; use of plagiarism-checking software.
- Organizing Ideas: Outlining, using headings/subheadings effectively, and ensuring paragraph coherence (topic sentences, linking words).
- Ethical use of AI: Citing AI generated material properly, maintaining original thought and voice, recognizing and mitigating AI bias, AI tool usage disclosures.

UNIT II: Structuring the Research Manuscript **10 Hours**

Guides students through crafting a complete research manuscript, including introduction, methodology, results, discussion, and conclusions, with emphasis on accurate data presentation, visualization, and proper manuscript formatting.

- The Introduction (Problem Statement): Funnel structure, establishing the gap, articulating the research question/hypothesis.
- The Methodology Section: Detailed reporting of procedures, justifying design choices, ensuring replicability.
- The Results Section: Integrating text, tables, and figures; reporting statistical or thematic findings without interpretation. Issues of misrepresentation, falsification, fabrication, and selective reporting in research writing.
- Tables and Figures: Principles of effective data presentation, labeling conventions, and integrating them seamlessly into the text
- Data Visualization Principles and Tools: Choosing the right graphical representation, Using specialized software for visualization.
- The Discussion & Conclusion: Interpretation of results, linking back to

literature, future research, and asserting the contribution/impact.

- Manuscript Formatting: Margins, font, line spacing, and general layout for submission

UNIT III: Citation and Reference Management 4 Hours

Focuses on mastering citation styles, managing references using software tools, and conducting efficient literature searches using databases and advanced search strategies.

- Citation Management: Detailed application of specific styles (e.g., APA 7th, MLA, Chicago, Vancouver), managing in-text citations, citation index.
- Reference Management Software (RMS): Zotero, Mendeley and other citation tools; searching specialized databases (e.g., Scopus, Web of Science, ScienceDirect);
- Databases and Search Strategy- Key search terms, Boolean operators, PRISMA diagram

UNIT IV: Publication and Presentation of Research 8 Hours

Explores journal selection, ethical publishing practices, research paper writing, and the creation and delivery of effective presentations and posters for diverse academic audiences.

- Types and Selection of Journals: Predatory journals, Cloned journals; Open access and Paid Journals; Impact Factor and other metrics of Journals
- Research Paper writing and publishing in peer-reviewed journals, understanding journal-specific guidelines.
- Formulating and Presenting a Research Poster
- Presentation Skills: Creating effective slides, summarizing complex findings for different audiences, and managing Q&A sessions.

Essential Readings:

UNIT I:

This unit introduces the essential principles of scholarly writing required for academic research. It focuses on developing clarity, precision, and coherence in written work while maintaining an appropriate academic tone. Students will learn strategies to

avoid different forms of plagiarism through ethical writing practices. The unit also addresses the responsible use of emerging tools such as AI in academic writing, emphasizing originality, transparency, and ethical responsibility in research communication.

- American Psychological Association. (2020). ***Plagiarism*** (7th ed.). APA Style. Retrieved from https://apastyle.apa.org/style-grammar-guidelines/citations/plagiarism

UNIT II:

This unit familiarizes students with accurate citation practices and systematic reference management in academic writing. Emphasis is placed on applying standard citation styles and using digital tools to organize references efficiently. The unit also covers the correct presentation of tables, figures, and overall manuscript formatting in line with journal and institutional requirements. Students will gain practical skills necessary for producing professionally structured research documents.

- Thomas, C. George (2021) Research Methodology and Scientific Writing (2nd ed.) Springer Nature
- American Psychological Association. (2020). ***APA stylistics: Basics*** (7th ed.). APA Style. Retrieved from https://apastyle.apa.org/style-grammar-guidelines/grammar/stylistics-basics
- American Psychological Association. (2023). ***Citing generative AI in APA Style: Part 1—Reference formats***. APA Style Blog. Retrieved from https://apastyle.apa.org/blog/cite-generative-ai-references
- American Psychological Association. (2020). ***Sample tables*** (7th ed.). APA Style. Retrieved from https://apastyle.apa.org/style-grammar-guidelines/tables-figures/sample-tables

UNIT III:

This unit focuses on the organization and presentation of a complete research report/document. Students will learn how to write each section of a research manuscript clearly and logically, from framing the research problem to presenting results and drawing conclusions. Attention is given to accurate reporting, effective data visualization, and maintaining integrity in research writing. The unit aims to strengthen students' ability to communicate research findings with clarity and

credibility.

- Montclair State University. (2021). ***How to prepare your dissertation in APA Style***. Retrieved from https://www.montclair.edu/graduate/wp-content/uploads/sites/58/2021/01/DISSERTATION-GUIDELINES-FOR-APA-STYLE-1-2021.pdf
- American Psychological Association. (2020). ***Heading levels*** (7th ed.). APA Style. Retrieved from https://apastyle.apa.org/style-grammar-guidelines/paper-format/heading-levels

UNIT IV:

This unit introduces students to the processes involved in publishing and presenting research work. It covers the selection of appropriate journals, awareness of unethical publishing practices, and the basics of writing for peer-reviewed publications. The unit also focuses on effective research presentation skills, including poster preparation and oral presentations. Students will develop confidence in communicating research findings to both academic and broader audiences.

- Tullu, M. S., & Karande, S. (2017). ***Writing a model research paper: A roadmap***. *Journal of Postgraduate Medicine*, *63*(3), 143–146. https://doi.org/10.4103/jpgm.JPGM_325_17
- Hamilton College. (n.d.). ***How to write an APA research paper***. Retrieved from https://www.hamilton.edu/academics/centers/writing/writing-resources/how-to-write-an-apa-research-paper
- American Psychological Association. (2020). ***Response to reviewers*** (7th ed.). APA Style. Retrieved from https://apastyle.apa.org/style-grammar-guidelines/research-publication/response-reviewers

Suggested Readings:

• AME Publishing Company. (2022). *Discussion and conclusion*. Retrieved from https://cdn.amegroups.cn/journals/vats/files/journals/27/articles/4955/public/4955-PB1-8866-R1.pdf?filename=amj-04-26.pdf

• McLeod, S. (2023). *How to write a methods section for a psychology paper*. Verywell Mind. Retrieved from https://www.verywellmind.com/how-to-write-a-methodsection- 2795726

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

Annexure-11

UNIVERSITY OF DELHI

Department of Home Science

Faculty of Science

I Year MSc. Resource Management and Design Application Department of Home Science University of Delhi

Course Credit Structure -NEP 2026

The department of home science offers master's programme in Resource Management & Design Application. This master's programme strives at empowerment through knowledge and skills towards management of personal, family, community and shared resources for creation of sensitive, aesthetic and sustainable environment. The programme strives to build a cadre of professionals in the area of sustainable management of resources and new product development. The courses are pitched at providing a strong theoretical base along with skill enhancement through hands-on training. The curriculum provides experiential training to students for professional and career readiness which enables students to participate in real life projects and develop the right skill set needed in a competitive market scenario.

Programme Specific Objectives:

- To build a cadre of professionals in the area of sustainable management of resources and new product development.
- To provide a strong theoretical base along with skill enhancement through hands-on training.
- To provide experiential training to students for professional and career readiness which enables students to participate in real life projects and develop the right skill set needed in a competitive market scenario.
- To train students to work in the areas of research, consultancy, programme, design, management and evaluation in various research and social development organizations

Programme Specific Outcomes:

- Professional and career readiness through participation in real life projects and develop the right skill set needed in a competitive market scenario.
- Enhanced entrepreneurial spirit through sounder management of facilities, marketing, finance and project management.
- Proficiency in various computer aided softwares along with design simulation thus giving a professional edge.
- Expertise in designing space and products using ergonomic, sustainable, economically and socio-culturally viable solutions with focus on life-cycle assessment approach.
- Proficiency in policies, practices and technologies for sustainable use of resources integrated with various dimensions and frameworks of environment management.

Course Credit Scheme M.Sc. Resource Management and Design Application

Programme Structure-1: (PG with only coursework)

Semester	Core Courses		Elective Course		Skill-Based Courses		Total Credits
	No. of courses	**Total credits**	No. of courses	**Total credits**	No. of courses	**Total credits**	
I	2	8	3	12	1	2	22
II	2	8	3	12	1	2	22
Total Credits for the course	16		24		4		44

List of PGCF courses of M.Sc. Resource Management and Design Application (Semester I and II of the One-year programme)

List of Courses to be offered to students opting for Structure-1 of M.Sc. in 1st and 2nd Semester of one year course							
Type of Course	**Type**	**Semester**	**Name of the Courses**	**Credits in each course**			
				Lecture	**Tutorial**	**Practical**	**Total**
Semester – I							
Discipline Specific Core Course	DSC 1	I	Inclusive Design Systems	3	0	1	4
Discipline Specific Core Course	DSC 2	I	Corporate Social Responsibility & Sustainability Reporting	3	0	1	4
Discipline Specific Elective Course	DSE 1	I	From the Pool of DSEs given below#	As per the specific course			4
Discipline Specific Elective Course	DSE 2	I	i. Statistics & Data Management	As per the specific course			4
Discipline Specific Elective Course	DSE 3	I	ii. Sustainable Development: Policies & Practices iii. Advanced Spatial Planning Systems iv. Climate Change, Ecosystem, & Societies: Issues & Concerns v. Design Strategies &	As per the specific course			4

			vi. Audit vi. Health & Safety in Built Environment vii. Social Design Methods & Research				
Skill Based Course	SBC 1	I	From the Pool of SBCs given below*	0	0	2	2
Semester-II							
Discipline Specific Core Course	DSC 3	II	Entrepreneurship and Enterprise Management	2	0	2	4
Discipline Specific Core Course	DSC 4	II	Financial Planning and Accounting Practices	3	0	1	4
Discipline Specific Elective Course	DSE 4	II	From the Pool of DSEs given below##	As per the specific course			4
Discipline Specific Elective Course	DSE 5	II	viii. Energy Policy, Systems and Sustainability	As per the specific course			4
Discipline Specific Elective Course	DSE 6	II	ix. Ergonomics & Occupational Safety Management x. Policies and Technologies for Waste Management xi. Professional Design Methods & Start-ups xii. Integrating Sustainable Development in Practice xiii. Design Processes in Built Spaces	As per the specific course			4
Skill Based Course	SBC 2	II	From the Pool of SBCs given below**	0	0	2	2
Pool of Discipline Specific Elective Courses to be offered in the 1st semester#	i. Statistics & Data Management						
	ii. Sustainable Development: Policies & Practices						
	iii. Advanced Spatial Planning Systems						
	iv. Climate Change, Ecosystem, & Societies: Issues & Concerns						
	v. Design Strategies & Audit						
	vi. Health & Safety in Built Environment						

	vii. Social Design Methods & Research
Pool of Discipline Specific Elective Courses to be offered in the 2nd Semester##	viii. Energy Policy, Systems and Sustainability
	ix. Ergonomics & Occupational Safety Management
	x. Policies and Technologies for Waste Management
	xi. Professional Design Methods & Start-ups
	xii. Integrating Sustainable Development in Practice
	xiii. Design Processes in Built Spaces
Skill Based Courses to be offered in 1st Semester*	i. CAD for Space Planning ii. ICTs for Sustainable Development iii. Internship
Skill Based Courses to be offered in 2nd Semester**	iv. Event Design and Strategies v. Program Monitoring and Evaluation vi. Internship

SEMESTER I

DISCIPLINE SPECIFIC CORE COURSE

INCLUSIVE DESIGN SYSTEMS

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Inclusive Design Systems	**4**	**3**	**0**	**1**	**As per admission norms**	**Nil**

Learning Objectives

- To develop an understanding of the core concepts, principles, and legal frameworks of inclusive and universal design.
- To build the ability to assess interior and exterior environments for accessibility using structured tools and user-centered methods.
- To cultivate skills in identifying user needs especially for older adults and individuals with disabilities and translating them into inclusive design opportunities.
- To enable students to review, analyze, and propose context-appropriate inclusive design interventions supported by case studies, standards, and practical findings.

Learning Outcomes

After completing the course, students will be able to:

- Understand inclusive design concepts, principles, and accessibility standards.
- Identify user needs and barriers faced by diverse populations, especially persons with disabilities and the elderly.
- Develop the ability to assess spaces and products for accessibility and propose practical improvements.
- Demonstrate sensitivity, awareness, and critical thinking in applying inclusive design approaches to real-world contexts.

THEORY
(Credits 3; Hours 45)

UNIT I: Foundations of Inclusive Design **11 Hours**

This unit introduces students to the fundamental concepts, scope, and relevance of inclusive and accessible design, focusing on creating awareness of diverse human needs and abilities.

- Concept, scope, and importance of inclusive design.
- Understanding human variability and spatial needs of Persons with disabilities (PwDs).
- Differences and overlaps between Inclusive Design, Universal Design, and Conventional Design.
- Universal Design philosophy and its integration in built environments and products.

UNIT II: Dimensions, Principles, and User Diversity **12 Hours**

This unit deepens understanding of user diversity, principles of inclusive design, and the role of assistive technologies in enhancing usability for all population groups.

- Dimensions of Inclusive Design: physical, sensory, cognitive, and social.
- Principles of inclusive design and their practical applications.
- Frameworks for understanding user diversity and design personas.
- Assistive devices and emerging technologies for accessibility (mobility aids, communication devices, smart assistive tech).
- Inclusive design evaluation methods and user testing.

UNIT III: Accessibility in Interior and Exterior Spaces **11 Hours**

This unit focuses on spatial accessibility, inclusive architecture, and environmental design strategies for creating barrier-free indoor and outdoor environments.

- Concepts and methodologies for inclusive spatial design.
- Accessibility requirements for interior spaces (homes, public buildings, workspaces).
- Accessibility requirements for exterior spaces (streetscapes, parks, transport, public amenities).

UNIT IV: Legal, Policy and Ethical Landscape **11 Hours**

This unit examines regulatory frameworks and responsible design practice.

- Legal norms and standards: RPwD Act, BIS Codes, ISO standards.
- Government policies and initiatives promoting accessibility and universal design.
- Ethical considerations in designing for disability, aging, and vulnerable

populations.

- Principles of responsible, participatory, and rights-based design approaches.

PRACTICAL
(Credits 1; Hours 30)

1. Conduct accessibility audits of selected indoor and outdoor spaces using structured checklists to identify physical, sensory, and navigational barriers affecting diverse users.
2. Map user experiences and activity flows for older adults and individuals with disabilities to identify unmet needs, challenges, and opportunities for inclusive design.
3. Analyze national and international aspects of inclusive architecture or built environments through secondary sources, highlighting effective design strategies and lessons for local application.
4. Apply tools and techniques for accessibility assessment, including barrier mapping, circulation analysis, and spatial observation, to evaluate real environments.
5. Review existing products, interior elements, or public-use items to identify inclusivity gaps and propose realistic improvements aligned with universal design principles.
6. Prepare a practical, inclusive design proposal based on user needs, audit findings, and legal accessibility guidelines

Essential Readings

UNIT I:

This unit introduces students to the fundamental concepts, scope, and relevance of inclusive and accessible design, focusing on creating awareness of diverse human needs and abilities.

- Nussbaumer, L. L. (2011). *Inclusive design: A universal need*. Bloomsbury Academic. ISBN 978-1563679216
- Steinfeld, E., & Maisel, J. L. (2012). *Universal Design: Creating Inclusive Environments*. Wiley.

UNIT II:

This unit deepens understanding of user diversity, principles of inclusive design, and

the role of assistive technologies in enhancing usability for all population groups.

- Maisel, J. L., Steinfeld, E., Basnak, M., Smith, K., & Tauke, M. B. (2018). *Inclusive design: Implementation and evaluation*. Routledge.
- Gilbert, R. M. (2025). *Inclusive design for a digital world: Designing with accessibility in mind* (2nd ed.). Apress.

UNIT III:

This unit focuses on spatial accessibility, inclusive architecture, and environmental design strategies for creating barrier-free indoor and outdoor environments.

- Goodman-Deane, J., Dong, H., Heylighen, A., Lazar, J., & Clarkson, J. (Eds.). (2023). *Design for sustainable inclusion: CWUAAT 2023*. Springer.
- Preiser, W., & Smith, K. (2011). *Universal design handbook* (2nd ed.). McGraw-Hill.
- Gupta, A., Yadav, M., & Nayak, B. K. (2025). A Systematic Literature Review on Inclusive Public Open Spaces: Accessibility Standards and Universal Design Principles. Urban Science, 9(6), 181. https://doi.org/10.3390/urbansci9060181

UNIT IV:

This unit examines regulatory frameworks and responsible design practice.

- Nussbaumer, L. L. (2011). *Inclusive design: A universal need*. Bloomsbury Academic. ISBN 978-1563679216

Suggested Readings

- Langdon, P., Lazar, J., Heylighen, A., & Dong, H. (Eds.). (2020). Designing for inclusion: Inclusive design—Looking towards the future. Springer.
- Heylighen, A. (2020). Designing for disabilities: Inclusive architecture reconsidered. Routledge.
- Clarkson, J., Coleman, R., Keates, S., & Lebbon, C. (2003). Inclusive design: Design for the whole population. Springer.
- Ostroff, E. (2011). Universal design: Principles and models. Fair Housing Center.

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

DISCIPLINE SPECIFIC CORE COURSE

CORPORATE SOCIAL RESPONSIBILITY AND SUSTAINABILITY REPORTING

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Corporate Social Responsibility and Sustainability Reporting	4	3	0	1	As per admission norms	Nil

Learning Objectives

- To understand the meaning, scope and importance of Corporate Social Responsibility (CSR)
- To learn about the policies, practices industry norms, potential business benefits, stakeholder influence with regard to CSR
- To learn about the planning, processes, implementation and monitoring of CSR activities
- To understand the need and benefits of sustainability reporting for businesses
- To learn about the various sustainability reporting guidelines

Learning Outcomes

After completing the course, students will be able to:

- Develop an understanding of the scope, approaches, policy and procedure of Corporate Social Responsibility (CSR)
- Understand planning, processes, implementation and monitoring of CSR projects through case studies
- Understand and evaluate CSR reports as per standard reporting guidelines
- Know about sustainability standards, indices and reporting guidelines

THEORY
(Credits 3; Hours 45)

UNIT I: Basics of Corporate Social Responsibility (CSR) 8 Hours

This unit aims at orienting the students towards the concept and importance of Corporate Social Responsibility (CSR), triple bottom line, and ESG

- Meaning, definition and importance of CSR
- History and evolution of CSR
- Sustainable businesses, triple bottom line, ESG (Environmental, Social and Governance)
- Practices and Initiatives for CSR, legal and economic perspective, theories, industry norms
- Global and Indian Scenario with Case studies

UNIT II: Corporate Social Responsibility: Policies and Practices 12 Hours

This unit aims to create an understanding on Indian legislations for CSR, UN guiding principles and SDGs, and other practices related to CSR.

- Indian legislations for CSR; Companies Act, 2013 and Amendments
- Global principles and guidelines for CSR (GRI framework, UN Global compact, CDP, OECD guidelines for multinational corporations, NVGs etc.)
- SDGs and CSR
- Globalization and CSR

UNIT III: CSR Activities: Planning and Strategizing 13 Hours

This Unit aims to create an understanding on planning and strategizing CSR activities.

- CSR planning and strategizing
- CSR and SMEs
- CSR Audit; issues related to CSR Audit
- Brand building through CSR communications

UNIT IV: Sustainability Reporting: Standards and Indices 12 Hours

This Unit aims to create an understanding towards the need and benefits of sustainability reporting and different sustainability reporting guidelines.

- Financial and non-financial disclosures, need and benefits of sustainability reporting
- Tools for stakeholder communication
- Sustainability Reporting Guidelines
- Structure of a sustainability report
- Sustainability reporting as per different guidelines

PRACTICAL
(Credits 1; Hours 30)

- CSR initiatives taken by corporates - Analysis through primary research
- Critical analysis of implementation strategies of CSR initiatives with reference to Foundation/Trust/Section 8 Companies etc.
- Planning innovative CSR Projects/Programmes in context of SDGs
- CSR communications: preparation of presentations, websites, print media, social media etc.
- Evaluation and preparation of CSR/sustainability/ESG reports with reference to different reporting guidelines like GRI, CDP, NVG etc.

Essential Readings:

UNIT I:

- Gupta, S. (2025). Corporate social responsibility and sustainable development goals for a developed India @2047. *Journal of Sustainable Business, 10*, 15. https://doi.org/10.1186/s40991-025-00118-1
- Debnath, P., & Chellasamy, P. (2022). An empirical study on issues and challenges of corporate social responsibility activities in India. *Asian Journal of Management, 13*(4), 345–350. https://doi.org/10.52711/2321-5763.2022.00056
- Institute of Directors India. (2020). *A Handbook on Corporate Social Responsibility, A Condensed Guide for Corporate Directors & Senior Executive*. Institute of Directors, New Delhi, India.

UNIT II:

- Mital, M., & Gupta, P. (Eds.). (2025). *Environmental Studies: Resources and Sustainability - A Textbook and Practical Manual*. Elite Publishing.
- Wirba, A. V. (2023). Corporate social responsibility (CSR): The role of government in promoting CSR. *Journal of the Knowledge Economy*, 1–27. https://doi.org/10.1007/s13132-023-01185-0

- Garg, K. (2021). *Corporate Social Responsibility (3rd edition)*. Bharat Law House Pvt. Ltd.

UNIT III:

- Lumde, N. (2024). *ESG and CSR: Strategies for Career Success and Corporate Responsibility*. Notion Press.
- Chandler, D. (2020). *Strategic Corporate Social Responsibility: Sustainable Value Creation.* SAGE Publications.

UNIT IV:

- Parikh, K. M. (2025). *ESG & BRSR Reporting*. Taxmann.
- Joseph, P. S. (2025). *A Guide to Sustainability Reporting in the Age of Greenwashing*. Self published.

Suggested Readings:

- Lumde, N. (2018). *Corporate Social Responsibility in India: A Practitioner's Perspective*. Notion Press. ISBN-10: 1644295431, ISBN-13: 978-1644295434.
- Stangis, D., & Smith, K. V. (2017). *The Executive's Guide to 21st Century Corporate Citizenship: How your Company Can Win the Battle for Reputation and Impact*. Emerald Publishing Ltd.
- Mitra, N., & Schmidpeter, R. (2016). *Corporate Social Responsibility in India: Cases and Development after the Legal Mandate.* Springer International Publishing, Switzerland.
- Reddy, V. R., & Dheeraja, C. (2016). *The Six Essential Steps in Implementing CSR*. Studera Press, New Delhi.
- Ahluwalia, J. S. (2015). *Environmental Governance for Sustainability in Ahluwalia,* J. S. (Editor), Environmental Governance: Transition to a Green Economy, New Delhi, IOD Publishing
- Nielsen. (2015). *The Nielsen Global Survey of Corporate Social Responsibility and Sustainability*. Oxford, Nielsen.
- Chakrabarty, B. (2015). *CSR in India*. Routledge.
- Epstein, M. J., & Buhovac, A. R. (2014). *Making Sustainability Work: Best Practices in Managing and Measuring Corporate Social, Environmental, and Economic Impacts*. Greenleaf Publishing Ltd.

- Korngold, A. (2014). *A Better World, Inc.: How Companies Profit by Solving Global Problems…Where Governments Cannot.* Palgrave Macmillan.
- Agarwal, S. (2013). *CSR in India*. SAGE Publications.
- Baxi, C. V. and Roy, R. S. (2011). *Corporate Social Responsibility,* Vikas Publishing House, New Delhi.
- Chatterji, M. (2011). *Corporate Social Responsibility*. Oxford University Press India; Reprint edition. ISBN-10: :13-ISBN ,0198069839 978-0198069836.

Journal articles (highly cited and relevant)

- Chatterjee, S., & Mirza, D. (2023). Sustainability reporting in India: A critical assessment of Business Responsibility Reports of the top 100 companies. *Sustainability Accounting, Management and Policy Journal*, *14*(7), 1541–1572.
- Thomas, R., & Bhaumik, A. (2023). ESG practices and firm performance in Indian listed companies. *Journal of Risk and Financial Management*, *16*(9), 405.
- Garg, P. (2024). Corporate responsibility (CSR), ESG goals and sustainable development in India—An analysis. *Corporate Social Responsibility in India* (pp. 115-132). Springer, Singapore.
- Mishra, M. K. (2020). Sustainability reporting practices of Indian corporate sector: A comparative analysis. *Journal of Business and Financial Affairs*, *9*(3), 375.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
STATISTICS AND DATA MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Statistics and Data Management	4	3	0	1	As per admission norms	Nil

Learning Objectives

- To develop understanding of fundamental and advanced statistical concepts used in research and data analysis.
- To enable students to apply descriptive and inferential statistics for real-world decision-making.
- To strengthen ability to formulate hypotheses, select appropriate statistical tests, and interpret outputs.
- To prepare students for quantitative research, industry analytics, and academic data projects.
- To train students in using Excel and SPSS for data handling, visualization, and interpretation.

Learning Outcomes

The students would be able to:

- Explain key concepts in descriptive and inferential statistics.
- Organize, clean, and summarize datasets using appropriate statistical tools.
- Apply probability distributions, correlation, regression, and hypothesis testing.
- Use Excel and SPSS for data visualization, statistical testing, and reporting.
- Interpret statistical outputs and draw valid conclusions for research decisions.
- Design and execute quantitative data analysis workflows independently.

THEORY

(Credits 3; Hours 45)

UNIT I: Introduction and descriptive Statistics 12 Hours

This unit will introduces the foundations of statistics and techniques for summarizing and describing data.

- Definition, scope, and applications of statistics
- Types of data: qualitative and quantitative
- Scales of measurement
- Classification & tabulation of data
- Graphical and visual representations
- Measures of central tendency: mean, median, mode
- Measures of dispersion: range, variance, standard deviation, coefficient of variation
- Skewness and kurtosis: meaning and interpretation

UNIT II: Probability and Probability Distributions 10 Hours

This unit explores probability concepts and major statistical distributions.

- Basic probability concepts: Addition & multiplication theorems
- Random variables: discrete and continuous
- Binomial and Normal distributions
- Sampling theory & sampling distributions
- Central Limit Theorem

UNIT III: Correlation and regression 8 Hours

This unit focuses on analysing relationships between variables.

- Correlation: Pearson and Spearman correlation
- Simple linear regression: model, estimation, interpretation
- Multiple linear regression: assumptions, multicollinearity, model building

UNIT IV: Hypothesis Testing and Non-Parametric Methods 15 Hours

This unit introduces hypothesis testing frameworks and non-parametric alternatives for non-normal data.

- Concept of hypothesis: null & alternative
- Types of errors, significance levels, p-value
- Parametric tests:
    - z-test
    - t-test (one sample, independent, paired)
    - Chi-square test

- Non-parametric tests:
    - Mann–Whitney U test
    - Wilcoxon signed-rank test
    - Kruskal–Wallis test
- Interpretation and reporting of statistical results
- Research Conclusion and recommendation

PRACTICAL

(Credits 1; 30 hours)

1. Data Entry, Coding & Cleaning: Importing data, handling missing values, variable labels, Excel formulas.
2. Descriptive Statistics & Visualization: Mean, Standard Deviation, frequency tables, histograms, boxplots (Excel + SPSS).
3. Cross-Tabulation & Chi-Square Test: PivotTables in Excel; Crosstabs in SPSS.
4. Correlation Analysis: Pearson & Spearman correlations; scatterplots.
5. Simple Linear Regression: Trendline in Excel; Regression output in SPSS.
6. Multiple Regression: Model summary, coefficients, interpretation using SPSS.
7. t-Tests: Independent, paired, and one-sample t-tests in SPSS.
8. ANOVA (One-way & Two-way): Running ANOVA and post-hoc analysis.
9. Non-Parametric Tests: Mann-Whitney, Wilcoxon, Kruskal–Wallis in SPSS.
10. Report Generation & Interpretation
11. Preparing APA-style tables, graphs, and interpretations in Excel/SPSS.

Essential Readings:

UNIT I

This unit describes the foundations of statistics and techniques for summarizing and describing data.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.). Pearson Prentice Hall.
- Bernard, H. R. (2000). *Social research methods: Qualitative and quantitative approaches*. Sage.
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.). CreateSpace Independent Publishing Platform.
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and*

education. Wiley.

UNIT II

This unit deals with the probability concepts, rules of probability, discrete and continuous distributions (Binomial, Poisson, Normal).

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*.

UNIT III

This unit focuses on relationship between variables, correlation coefficients, simple and multiple regression, regression assumptions.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Muijs, D. (2004). *Doing quantitative research in education with SPSS*. Sage.

UNIT IV

The unit deals with statistical inference such as t-tests, ANOVA, Chi-square, non-parametric tests (Mann-Whitney, Wilcoxon, Kruskal-Wallis), decision making.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* **(2nd ed.).**
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*.
- Muijs, D. (2004). *Doing quantitative research in education with SPSS*.

Suggested Readings

- Field, A. (2025). *Discovering Statistics Using IBM SPSS Statistics* (6th ed.). Sage.
- Kalyanaraman, K., Ramanathan, H. N., & Harikumar, P. N. (2025). *Statistical Methods for Research: A Step-by-Step Approach Using IBM SPSS*. Atlantic Publishers.
- Healey, J. F., & Donoghue, C. (2021). *Statistics: A Tool for Social Research and Data Analysis* (11th ed.).

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

SUSTAINABLE DEVELOPMENT: POLICIES & PRACTICES

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Sustainable Development: Policies & Practices	**4**	**3**	**0**	**1**	**As per admission norms**	**Nil**

Learning Objectives

- To sensitize towards indicators and measures of sustainable development
- To give knowledge of and capacity to analyze policies and practices for sustainable development of different sectors
- To understand management strategies for noise, water, energy etc.
- To understand the components and techniques of EIA

Learning Outcomes

After completing the course, students will be able to :

- Gain insight into the need, indicators and measures of sustainable development along with challenges and responses
- Understand and critically analyze policies and practices regarding various sectors- air, water, agriculture, etc.
- Gain knowledge of water management systems, water quality parameters, rainwater harvesting
- Understand the components & techniques of EIA, legislative aspects, current practices & constraints

THEORY
(Credits 3; Hours 45)

UNIT I: Concept and dimensions of sustainable development 10 Hours

This unit covers throws light on the concept of sustainable development, its objectives and parameters.

- Concept of sustainability, dimensions of sustainability - social, economic and environmental
- Objectives and parameters of sustainable development
- Need and indicators of sustainable development
- Challenges and responses to Sustainable Development
- Evolution, approaches, interpretation of SDGs
- Environmental pollution and sustainability with reference to home, community and society

UNIT II: Water management: Practices, policies and technologies 12 Hours

This unit focuses on policies, practices and technologies for the management of water.

- Need and importance of water management systems, surface and ground water management
- Water pollutants, their sources, effect of water pollution on environment and health
- Water quality parameters, water pollution control strategies
- Waste water management systems: techniques and technologies
- Rainwater harvesting: need and principle

UNIT III: Air and noise management: Practices, policies and technologies 12 Hours

This unit focuses on policies, practices and technologies for the management of air and noise.

- Need and importance of air pollution management
- Air pollution, sources and effects on environment and health
- Ambient air quality standards, Air Quality Index (AQI)

- Controlling air pollution
- Noise pollution and management, standards for noise pollution, policy instruments for noise management

UNIT IV: Environmental Impact Assessment: Approaches & Techniques
11 Hours

This unit throws light on Environmental Impact Assessment (EIA) as an important practice for sustainable development.

- Environmental Impacts – examples, need for assessment, difficulties
- The EIA Approach – Background, Objectives, Components & Techniques
- Environmental impact assessment- importance, significance, steps, procedure to be followed, role of Government and non-governmental organizations
- EIA in India – Legislative aspects, Current practices & Constraints, way forward

PRACTICAL
(Credit 1; Hours: 30)

- Understanding Sustainable Development Goals (SDGs) with reference to India - Analysis through policy implementation, feedback from stakeholders etc.
- Government initiatives on sustainable development - Focus areas may include policy analysis, linkages of the identified policy with other goals (SDGs etc.), implementation challenges, outcomes and recommendations – Critical evaluation through primary research
- Monitoring of air quality, controlling air pollution and noise management – Analysis of the current scenario of the initiatives taken by the government and industry
- Water pollution control techniques and water treatment technologies – Analysis of the current scenario of the initiatives taken by the government and industry
- Study of water harvesting scenario in different states of India, Study of rain water harvesting systems – traditional and contemporary, Calculation of rainwater harvesting potential
- EIA for different sectors – Reviewing and preparing EIA reports

Essential Readings:

UNIT I:

- Bhardwaj, A. (2024). *Sustainable Development in India: Future Challenges*. Shandilya Publications.
- Jana, K. (2023). *The Sustainable Development Goals in India: Few Issues & Contexts*. Redshine Publication.
- IPCC. (2023). *AR6 Synthesis Report: Climate Change 2023*. IPCC.
- Patel, B. N., & Nagar, R. (2018). *Sustainable Development and India.* Oxford University Press.

UNIT II:

- Mital, M., & Gupta, P. (Eds.). (2025). *Environmental Studies: Resources and Sustainability - A Textbook and Practical Manual.* Elite Publishing.
- Meena, M. L., Varale, Y., Upadhyay, K. K., & Talukdar, P. (2024). *Sustainable Water Management.* Bhumi Publishing.
- Grigg, N. (2023). *Water Resources Management: Principles, Methods, and Tools*. John Wiley & Sons: New Jersey.

UNIT III:

- Bhati, S. C. (2021). *Textbook of Air Pollution and its Control*. Atlantic.
- Yerramilli, A. (2019). *Air pollution: Prevention and Control Technologies*. BS Publications.

UNIT IV:

- Bhateria, R., Sharma, M., Singh, R., & Kumar, S. (2024). *Environmental Impact Assessment*. Springer.
- Dutta, V., & Ghosh, P. (Editors). (2023). *Sustainability: Science, Policy, and Practice in India: Challenges and Opportunities.* Springer.

Suggested Readings:

- Ristinen, R.A. and Kraushaar, J.J. (2006). *Energy and the Environment.* John Wiley & Sons, Inc., USA.

- Boyle, G. (2004). *Renewable Energy: Power for a Sustainable Future.* Oxford University Press, UK.
- Boyle, G., Everett, B. and Ramage, J. (Editors) (2003). *Energy Systems and Sustainability: Power for a Sustainable Future.* Oxford University Press, UK.
- Lee, N. and C. Kirkpatrick (Eds). (2000). *Integrated Appraisal and Sustainable Development in a Developing World.* Cheltenham, Edward Elgar.

Journal Articles (high citation index)

- Gupta, A., & Dikshit, A. K. (2020). Environmental and health impacts of air pollution: A review. *Frontiers in Public Health*, *8*, 14.
- Gulia, S., Goyal, S. K., Kumar, A., & C. S., P. (2021). Evolution of air pollution management policies and research gap assessment in India. *Science of The Total Environment*, *800*, 149594.
- Garg, N., & Maji, S. (2016). A retrospective view of noise pollution control policy in India: Status, proposed revisions and control measures. *Journal of Cleaner Production*, *133*, 1063–1078.
- Hadden, S. G. (1987). Environmental regulations, air and water pollution, and infant mortality in India. *Population and Environment*, *9*(2), 79–103.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

ADVANCED SPATIAL PLANNING SYSTEMS

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Advanced Spatial Planning systems	**4**	**2**	**0**	**2**	**As per admission norm**	**Nil**

Learning Objectives

- This course focuses on methodological and technical approaches to planning spaces and their application in building interiors.
- The students will gain information and understanding of the social, psychological, and functional contexts that influence efficient movement patterns in contemporary space structuring.

Learning Outcomes

The students would be able to:

- Understand the concept of space design and its application in building interiors.
- Enable exploration of insights for a conducive socio-economic and environmental impact.
- Give technical inputs in professional interior designing of residential and commercial spaces.

THEORY

(Credits 2; Hours 30)

UNIT I: Designing Sustainable Spaces **8 Hours**

This unit focuses on the fundamental principles of advanced spatial planning and their relationship with sustainability and heritage.

- Structuring spaces for different uses

- Social and psychological context of space design
- Design efficiency in terms of the pattern of movement and functionality
- Green building design and audit, Energy efficiency in building construction, Modular system in construction of buildings

UNIT II: Restoration and Repair of Heritage properties 6 Hours

This unit provides an introduction to the critical field of heritage conservation, focusing specifically on the technical and theoretical aspects of restoring historic structures.

- Types of heritage structures
- Role of agencies involved in restoration of heritage properties
- Elements of restoration
- Development of architectural styles and trends in India and around the world (Focus on Indian Palaces/Forts etc);

UNIT III: Space Designing for Interior Services 8 Hours

This unit delves into the essential technical services required within a built space.

- Lighting design for different spaces
- False Ceilings: construction techniques
- Acoustics: Types of acoustic design and materials, sound transmission, reverberation, and propagation
- Air Conditioning: duct design and layout plan
- Fire safety: Types, Evacuation plans
- Types of security services in buildings

UNIT IV: Visual Merchandising and Window Display 8 Hours

This unit introduces the art and science of Visual Merchandising (VM), focusing on its role in retail and customer engagement.

- Defining Visual Merchandising:
- Key Principles of Visual Merchandising:Color Psychology, Space Planning, Signage and Graphics, Lighting, Sensory Appeal.
- The Impact of Visual Merchandising on Customer Behavior
- Exploring and Understanding Company's Visual Design Policy
- Upselling via Window Display

- Understanding the Different Components that Contribute to Creating High Quality Window Displays
- Factors to be Considered When Creating a Professional Window Display

PRACTICAL
(Credits 2; Hours 60)

1. Conduct a survey to analyze and document the evolution of design practices, specifically focusing on how new design solutions are implemented to reflect and meet changing user needs.
2. Undertake site visits to physically examine and study various examples of existing structures and spaces, documenting different types of designs that demonstrate exceptional user-friendliness and accessibility.
3. Produce detailed presentation drawings, including floor plans, for diverse commercial and public interior spaces such as retail offices, hotel public areas, stand-alone restaurants, gymnasiums, health clubs, and sports complexes.
4. Generate comprehensive working drawings covering interior service plans, including Electrical layouts, reflected ceiling plans, wall treatment specifications for temperature control and acoustics, electrical planning details, and other furnishing and perspective drawing specifics.
5. Investigate and evaluate the concept of wash fastness in materials, which refers to a material's resistance to color loss or fading when exposed to washing.
6. Perform case studies and surveys on organizations that successfully foster creativity, innovation, and new venture creation, focusing on emerging technological and industrial trends that disrupt markets and influence business decisions.
7. Identify potential business opportunities based on emerging industry trends and subsequently develop detailed business plans outlining strategies for market entry, operation, and growth.
8. Engage in design exploration by examining different themes influenced by culture, specific occasions, and brand identity, and then create theme-based mood boards to guide the design of promotional displays.
9. Detailed plans for display areas by strategically understanding and implementing effects created by lighting schemes, mannequin grouping, color usage, and establishing

effective focal points. This also includes the assessment, evaluation, and budgeting for the display area.

10. Create detailed technical designs for visual displays, using software like AutoCAD 2D and Photoshop for both 2D and 3D display concepts. This includes developing signage and graphics, designing lighting plans to create specific focal points, and carefully selecting suitable coverings, props, and merchandise.

Essential Readings

UNIT I:

This unit focuses on the fundamental principles of advanced spatial planning and their relationship with sustainability and heritage.

- Alexander, C., Ishikawa, S., & Silverstein, M. (1977). *A pattern language: Towns, buildings, construction*. Oxford University Press.
- Ching, F. D. K. (2014). *Architecture: Form, space, and order* (4th ed.). John Wiley & Sons.
- Neufert, E. (2019). *Architects' data* (5th ed.). Wiley-Blackwell.
- U.S. Green Building Council. (2013). *LEED reference guide for building design and construction* (v4).

UNIT II:

This unit provides an introduction to the critical field of heritage conservation, focusing specifically on the technical and theoretical aspects of restoring historic structures.

- Borden, D., Elzanowski, J., Lawrenz, C., & Miller, T. (2008). *Architecture: A world history*. Abrams.
- Brown, P. (2010). *Indian architecture* (Vols. 1–2). D. B. Taraporevala Sons & Co.
- Indian National Trust for Art and Cultural Heritage. (2004). *Charter for the conservation of unprotected heritage and sites in India*. INTACH.
- Marshall, J. (1923). *Conservation manual: A handbook for the use of archaeological officers and others entrusted with the care of ancient monuments*. Superintendent of Government Printing.
- Sharanappa. (2025). Role of UNESCO and ASI in the heritage conservation of India.

UNIT III:

This unit delves into the essential technical services required within a built space.

- ASHRAE. (2022). *ASHRAE design guide for duct systems*. American Society of Heating, Refrigerating and Air-Conditioning Engineers.
- Bureau of Indian Standards. (2016). *National building code of India 2016* (Vol. 1 & 2).
- Chudley, R., & Greeno, R. (2020). *Building construction handbook* (12th ed.). Routledge.
- Editors of Cool Springs Press. (2017). *Black & Decker: The complete guide to finishing walls & ceilings*. Cool Springs Press.
- Konstantzos, I., Sadeghi, S. A., Kim, M., Xiong, J., & Tzempelikos, A. (2020). The effect of

lighting environment on task performance in buildings – A review. *Energy and Buildings*, *226*, Article 110394. https://doi.org/10.1016/j.enbuild.2020.110394

- Templeton, D. (Ed.). (1999). *Acoustics in the built environment: Advice for city planners and architects* (2nd ed.). Architectural Press.

UNIT IV:

This unit introduces the art and science of Visual Merchandising (VM), focusing on its role in retail and customer engagement.

- Bellizzi, J. A., Crowley, A. E., & Hasty, R. W. (1983). The effects of color in store design. *Journal of Retailing*, *59*(1), 21–45.
- Huddleston, P., Behe, B. K., Minahan, S., & Fernandez, R. T. (2015). The effect of visual merchandising on consumer impulse buying behavior. *The International Review of Retail, Distribution and Consumer Research*, *25*(1), 69–88. https://doi.org/10.1080/09593969.2014.911199
- Pegler, M. M., & Kong, A. (2018). *Visual merchandising and display* (7th ed.). Fairchild Books.
- Underhill, P. (2009). *Why we buy: The science of shopping* (Updated and rev. ed.). Simon & Schuster.

Suggested Readings

- Kibert, C. J. (2016). *Sustainable construction: Green building design and delivery* (4th ed.). Wiley.
- Ching, F. D. K . (2014). Building Construction Illustrated, Wiley, New Jersey
- DeChiara, J., Panero, J. & Zelnik, M. (2011). Time Saver Standards for Interior Design and space planning, second edition. McGraw-Hill Education
- Goel, S., Seetharaman, P. & Kakkar, A. (2015). Manual on Interior space designing, Elite publishing house
- Shah, M. G., Kale, C. M., Building drawing, 5th edition, Tata McGraw Hill publishing, New Delhi.

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

DISCIPLINE SPECIFIC ELECTIVE

CLIMATE CHANGE, ECOSYSTEM & SOCIETY: ISSUES & CONCERNS

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Climate Change, Ecosystem & Society: Issues & Concerns	4	3	0	1	As per admission norms	Nil

Learning Objectives

- To impart knowledge about science and policy of climate change along with climate vulnerabilities on different systems
- To understand the adaptation and mitigation strategies to deal with climate change for different sectors
- To learn about the policy framework for controlling climate change

Learning Outcomes

After completing the course, students will be able to:

- Understand concept of climate change, components of climate change system, global warming-causes and consequences
- Understand vulnerabilities and impact of climate change on different systems
- Gain insight into adaptation and mitigation strategies for different sectors
- Understand policies and programs –global and national to control climate change

THEORY

(Credits 3; Hours 45)

UNIT I: Concept, components and science of climate change 11 Hours

This unit covers throws light on the history and components of climate change.

- History and evidence of climate change
- Natural and human induced causes of climate change
- Components of climate change system, Biosphere and geosphere
- Biogeochemical/Nutrient cycles
- Climate change, ecosystem and society

UNIT II: Climate Change-global-regional scenario and gender perspective 10 Hours

This unit throws light on recent issues, global scenario and gender perspective in climate change

- Recent issues in climate change (ozone hole, melting of glaciers, atmospheric brown clouds)
- Global scenario, climate resilience, natural resource management, future impacts of climate change
- Global warming- causes, consequences, greenhouse effect and greenhouse gases
- Gender perspectives on climate change

UNIT III: Vulnerabilities, adaptation and mitigation options for climate change 12 Hours

This unit focuses on impacts of climate change and vulnerable sectors along with adaptation and mitigation strategies.

- Impacts of climate change along with sectoral vulnerabilities on both natural and managed systems both present and projected on various sectors - Agriculture, forestry and bio-diversity; Human health, infrastructure, industry; Water resources, sea level rise; Extreme events
- Adaptation options for various sectors, factors affecting adaptation, strategies, constraints and consequences
- Mitigation strategies for various sectors, stabilisation scenario, mitigation options, programmes and initiatives, mitigation and sustainable development linkages
- Climate change mitigation programmes in energy and industry sector, Case studies with focus on India

- Recent issues in climate change, future impacts of climate change

UNIT IV: Policies and programs for controlling climate change 12 Hours

This unit throws light on the policy environment for climate change, both national and international.

- International efforts and policy frameworks - history, objectives, activities, equity issues, key issues in multilateral negotiations on climate change, international protocols, role and outcomes of UNFCCC, IPCC
- India's national policy framework, NAPCC-targets and achievements, PAT (Perform, Achieve, and Trade) scheme, Forest certification (FSC, SFI, PEFC)
- CO_2 sequestration, forests and other sinks in India, opportunities and concerns
- The global carbon market, Carbon Pricing, Carbon Tax, Emission reduction certificates

PRACTICAL

(Credit 1; Hours: 30)

- Climate change: causes, impacts, adaptation and mitigation strategies for different sectors – Review, analysis and creation of portfolio
- Conducting survey on assessing awareness about climate change related issues among different target groups
- Critically analyzing measures adopted by large industries to reduce their Greenhouse Gas (GHG) emissions through appraisal of mitigation and adaptation practices to climate change through industry cluster approach
- Adaptation and mitigation strategies/initiatives taken by central and state governments to tackle climate change - Analysis through policy implementation, feedback from stakeholders etc.
- Regional climate vulnerabilities and adaptation and mitigation strategies - Critical analysis with focus on different states and geographical locations
- Designing/developing and conducting need based training/awareness generation programs for different target groups towards lifestyle changes for reducing carbon footprint/climate change

Essential Readings:

UNIT I:

- Singh, A. K. (2023). *Global Warming and Climate Change : Story of India's Climate Disaster and How to Avoid it.* Chennai, India: Notion Press Media Pvt Ltd.
- Clack, T., Meral, Z., & Selisny, L. (2023). *Climate Change, Conflict and (In)Security: Hot War*. Routledge.
- IPCC. (2023). *AR6 Synthesis Report: Climate Change 2023*. IPCC.

UNIT II:

- Khare, N. (2025). *Climate Change in India: Impacts and Assessments*. CRC Press.
- Mital, M., & Gupta, P. (Eds.). (2025). *Environmental Studies: Resources and Sustainability - A Textbook and Practical Manual*. Elite Publishing.
- Ramesh, M. (2018). *The Climate Solution: India's Climate Change Crisis and What We Can Do About It.* Hachette India.

UNIT III:

- Srivastava, R. K., & Chakraborty, A. (Eds.). (2025). *Mitigation and Adaptation Strategies Against Climate Change in Natural Systems.* Springer.
- Sabel, C. F., & Victor, D. G. (2022). *Fixing the Climate: Strategies for an Uncertain World.* Princeton University Press.

UNIT IV:

- Kedia, S., Khanna, P., Raj, S., Amanuma, N., & Gupta, H. (2024). *Synergies between Climate Action and SDGs: Implications for Multilateralism*. SDG Charter, Act4Earth, and World Sustainable Development Summit. New Delhi: The Energy and Resources Institute.
- Deutscher, G. (2023). *Climate Debt: Combining The Science, Politics And Economics of Climate Change.* World Scientific Publishing Co Pte Ltd.

Suggested Readings:

- Agarwal, S.K. (2003). *Environmental Scenario for 21st Century*. New Delhi: APH.
- Hardy, J. (2003). *Climate Change: Causes, Effects and Solutions*. John Wiley & Sons.
- Kelkar, U., & Bhadwal, S. (2007). South Asian Regional Study on Climate Change Impacts and Adaptation: Implications for Human Development. Human Development Report 2007/2008. Fighting Climate Change: Human Solidarity in a Divided World. Human Development Report Office, Occasional Paper.
- Kovats, S., & Akhtar, R. (2008). Climate, climate change and human health in Asian cities. Environment and Urbanization 29 (1): 165-175.
- Pittock, B. (2009). Climate change: The science, impacts and solutions 2nd edition. CSIRO, Melbourne, and Earthscan, London.

Journal article (highly cited and relevant):

- Dubash, N. K. (2011). The politics of climate change in India: Power, interest and contested development. *IDS Bulletin*, *42*(2), 97–106.

- Singh, C., & Deshpande, T. (2016). How do we assess vulnerability to climate change in India? A systematic review of literature. *Mitigation and Adaptation Strategies for Global Change*, *21*, 1083–1106.

- Gulia, S., Goyal, S. K., Kumar, A., & C. S., P. (2021). Evolution of air pollution management policies and research gap assessment in India. *Science of The Total Environment*, *800*, 149594.

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

DISCIPLINE SPECIFIC ELECTIVE
DESIGN STRATEGIES & AUDIT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Design Strategies & Audit	**4**	**2**	**0**	**2**	**As per admission norms**	**Nil**

Learning Objectives

- Develop the ability to identify design problems and propose effective solutions for specific products or situations.
- Equip students with the skills to integrate sustainable design principles in products and services.
- Enhance analytical skills through design audits to assess the feasibility, viability, and sustainability of designs.

Learning Outcomes

After completing this course, students will be able to:

- Recognize design challenges and apply a life-cycle assessment approach to find suitable solutions.
- Assess and evaluate designs for safety, ergonomics, functionality, and sustainability through product audits.

THEORY

(Credits 2; Hours 30)

UNIT I: Product Semantics and User Experience **8 Hours**

This unit delves into product semantics, the emotional connection between users and products, and the development of a logical design approach.

- Theories of product semantics and their effect on design.

- Exploring product emotion, value, and attachment.
- Understanding product identity and its role in design.
- Usability and enhancing user experience through design.

UNIT II: Design as a Management Tool and Professional Practices 6 Hours

This unit focuses on the managerial aspects of design, including the evaluation process, team management, and professional ethics in design practices.

- Design evaluation, key designer attributes, and setting up a design office.
- Client relations, business correspondence, and managing the design process.
- Human factors in team management and design workflow.
- Legal aspects including ethics, design briefs, costing, patent registration, and fee estimation.

UNIT III: Product Interface Design 10 Hours

This unit covers designing and evaluating product interfaces with a focus on user-centered design, ergonomics, prototyping, and interaction within complex systems.

- Visual, functional, and ergonomic requirements of product interface design.
- Human factors and the importance of user-centered and participatory design.
- Scenario building, storyboarding, and prototyping for interactive design.
- Evaluating user interfaces and designing for complex system

UNIT IV: Product Analysis and Audit 6 Hours

This unit highlights analyzing products, understanding contextual applications, evaluating design guidelines, and conducting design audits.

- Product analysis- diachronic and synchronic
- Understanding and analysing contexts – parallel and future situations
- Evaluation of design guidelines
- Design audit

PRACTICAL

(Credits 2; Hours 60)

1. Product Design Audit: Conduct a critical design audit of an existing product, evaluating aesthetics, functionality, and usability.
2. Sustainability Assessment: Perform a sustainability audit on a product, analyzing materials, energy use, and environmental impact.
3. Safety Evaluation: Assess a product for safety compliance and potential hazards, proposing improvements.
4. Ergonomic Analysis: Examine a product for ergonomic efficiency and user comfort, suggesting design modifications.
5. User interface design portfolio
6. Critical evaluation of existing product
7. Finding solution to design problems
8. Sketches and design of improvised product
9. Prototyping new product based on improvised design of user-interface
10. Working on variations or different formats of the new product

Essential Readings

UNIT I:

This unit delves into product semantics, the emotional connection between users and products, and the development of a logical design approach.

- Krippendorff, K. (2006). *The Semantic Turn: A new foundation for design*. Boca Raton, London, New York: Taylor & Francis, CRC Press.
- Norman, D.A. (2004). *Emotional Design: Why we love (or hate) everyday things*. New York, NY: Basic Books.

UNIT II:

This unit focuses on the managerial aspects of design, including the evaluation process, team management, and professional ethics in design practices.

- John, T. (2005). In the bubble: designing in a complex world
- Agarwal, U. A., Jain, K., Anantatmula, V., & Shankar, S. (2023). *Managing people in projects for high performance: Behavioural approach to productive project teams*. Springer.

UNIT III:

This unit covers designing and evaluating product interfaces with a focus on user-centered design, ergonomics, prototyping, and interaction within complex systems.

- Rangaswamy, N., Sim, G. R., & Borah, P. P. (Eds.). (2025). *Human-Computer Interaction: Design and Research* (Vols. I & II). Springer.
- Khan, M. I. (2025). *Industrial ergonomics*. PHI Learning.
- Ghosh, A. (2024). *Mastering UX design with effective prototyping*. BPB Publications.
- Gandotra, V. et al. (2013). *Essentials of Ergonomics*, Dominant Publishers: Delhi
- William, L. (2003). *Universal Principles of design*, Rockport.

UNIT IV:

This unit highlights analyzing products, understanding contextual applications, evaluating design guidelines, and conducting design audits.

- Gander, C., & Vaidya, S. (2024). *Think like the minimalist*. Penguin Business.
- Tiwari, S. R., & Swarup, R. R. (2024). *Design thinking: A comprehensive textbook*. Wiley India.
- Jain, K., & Kalbande, A. (2023). *UI design: Key to captivate user understanding*. Sybgen Learning.

Suggested Readings:

- Jordan, Pat. (1998*). Human Factors in Product Design: Current Practice and Future Trends.* London: Taylor and Francis.
- Macleod, Dan. (1995). *The Ergonomics Edge: Improving Safety, Quality and Productivity*. New York: Nostrand Reinhold.
- Mugge, R. (2008). *Emotional Bonding with Products: Investigating Product Attachment from a Design Perspective*. VDM Verlag
- Norrid, B and Wilson, J.R. (2001). *Designing Safety into Products*. London: Taylor and Francis.
- Wilson, J.R. and Covlett, N. (2001). *Evaluation of Human Work: A Practical Ergonomics Methodology*. London: Taylor and Francis

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

HEALTH & SAFETY IN BUILT ENVIRONMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Health & Safety in Built Environment DSE	**4**	**2**	**0**	**2**	**As per admission norms**	**Nil**

Learning Objectives

- To sensitize the students towards concept of health & safety in built environment with specific reference to indoor environment
- To build the ability to identify, assess, and manage risks related to air quality, thermal comfort, lighting, noise, and exposure to hazards.
- To equip students with practical knowledge of human health risk assessment and safety management practices relevant to buildings and indoor spaces.

Learning Outcomes

After completing the course, students should be able to:

- Explain how indoor environmental factors such as air quality, temperature, humidity, lighting, and acoustics influence human health and comfort.
- Understand the health and safety issues in built environment with respect to indoor environment quality
- Develop skills to carry out risk assessment and vulnerability analysis
- Get acquainted to environmental and safety management

THEORY

(Credits 2; Hours 30)

UNIT I: Introduction to concept of built environment **7 Hours**

This unit introduces the built environment through a sustainability lens, highlighting

systems thinking, interdependencies, and cross-sectoral approaches.

- Definition and components of built environment
- Whole house approach to built environment
- Introduction to safety and health issues in built Environment
- Impact of physical planning and zoning on health and safety

UNIT II: Fundamentals of the Indoor Environment **8 Hours**

This unit explores key parameters of indoor environmental quality and how they influence comfort, health, and productivity. Students learn to connect theory with real-world building performance.

- Indoor environment parameters: IAQ, Thermal comfort, Lighting and Acoustics
- Health and comfort in the indoor environment
- Indoor air pollution – causes, effects, prevention & control technologies
- Standards pertaining to IAQ guidelines (e.g., ASHRAE, ISHRAE, USEPA, WHO etc.)
- Management of the indoor environment
- Impact of IEQ on occupants' health and productivity

UNIT III: Human Health Risk Assessment (HHRA) **8 Hours**

This unit focuses on turning analysis into practical action. Students learn frameworks for evaluating health risks and planning interventions for real situations.

- Introduction to Human Health Risk Assessment with reference to indoor and outdoor spaces
- Steps in Human health Risk Assessment: Risk identification, Exposure Assessment, Dose-Response Relationship, Risk Communication, Quantification of Human Health Risk Assessment, Human Health Risk Assessment with respect to air, water, soil and water pollution
- Introduction to Social and Environmental Risk Screening

UNIT IV: Environment and Safety Management **7 Hours**

This unit explains how safety and sustainability practices are integrated into organizational

systems, governance processes, and reporting frameworks.

- Review and comparison of Global and Indian legal provisions related to Occupational Safety and Health including OSHA and Factories Act
- Introduction to HAZOP and HCCA Studies
- The Total Quality Environment Management
- Introduction to Total Productive Maintenance (TPM), Pillars of TPM

PRACTICAL
(Credits 2; Hours 60)

1. **Mapping the built environment of a campus zone**: Mapping the built environment of a campus zone: Identification of key built-environment components (land use, circulation paths, green/open spaces, building footprints, and service areas) on sketches or existing floor/site plans, and annotation of associated health and safety implications such as noise, traffic exposure, and crowding. Preparation of a labelled map and a brief note summarising major risks and suggested improvements.

2. **Planning and zoning critique exercise:** Comparative review of photographs and plan excerpts from two contrasting neighbourhoods or campuses to examine physical planning and zoning features such as setbacks, mixed land use, open/green space, and traffic separation. Discussion and short written reflection on the likely impacts of these features on walkability, safety, and indoor environmental quality.

3. **Indoor environment parameter profiling:** Recording and interpretation of secondary or provided data for key indoor environmental parameters (temperature, relative humidity, noise levels, illuminance, and CO_2/$PM_{2.5}$) in a classroom or laboratory setting. Comparison of observed values with ASHRAE/ISHRAE/WHO benchmark ranges and completion of a short worksheet on expected comfort, health implications, and likely occupant complaints.

4. **Demonstration Session and Hands on Activity on IAQ Monitor:** Hands on experience on measuring and interpreting indoor air quality data using monitoring tools.

5. **Ventilation and layout assessment:** Analysis of room layout drawings to identify air flow paths, locations of windows and doors, occupancy density, and potential stagnant zones. Marking of likely indoor air quality and thermal comfort issues and preparation of brief recommendations for low-cost improvements such as changes in openings, use of fans, and revised seating layout.

6. **Design of a training module on "Health & Safety in Indoor Environments":** Small-group exercise in which students develop a short training package for facility managers or school/office staff, integrating concepts from all units on built environment, indoor environmental quality, health risk, and safety management. The activity involves identifying key indoor hazards (e.g., poor ventilation, inadequate lighting, noise, crowding), selecting appropriate control measures, and tailoring messages to non-technical audiences

7. **Screening environment for social and environmental risks**: Practical assessment of built spaces to identify risks that affect communities and ecosystems using standardised checklists. Analysing and reporting the results.

8. **Total Quality Environment Management (TQEM) walk-through:** Design of a brief

   TQEM checklist for an educational or office building focusing on environmental performance and safety (waste handling, energy use, indoor air quality, noise, water use, emergency readiness). In small groups they conduct a walk-through audit, rate performance on each item, and write a short report summarising strengths, non-conformities, and priority corrective actions.

Essential Readings:

UNIT I: Introduction to concept of built environment

- Corburn, J., & Cohen, A. K. (2023). *The built environment and public health* (2nd ed.). Wiley.
- Dovjak, M., & Krainer, A. (2019). *Creating healthy and sustainable buildings: An assessment of health risk factors.* Springer.
- Lopez, R. P. (2023). *The built environment and public health (2nd ed.).* John Wiley & Sons.

UNIT II: Fundamentals of Indoor Environment

- Datta, A., Kumar, P., Sharma, A., & Patel, D. (2023). *Indoor environmental quality in Indian non-residential buildings: Implications for occupants' health and comfort.* Building and Environment, 242, 110550.
- World Health Organization. (2010). *WHO guidelines for indoor air quality: Selected pollutants.* WHO.

UNIT III: Human Health Risk Assessment (HHRA)

- Dwivedi, S., et al. (2023). *Revelations to indoor air pollutants and health risk among women: A systematic review*. Environmental Challenges, 11, 100649.
- Felgueiras, F., Almeida, R. M. S. F., & Gameiro da Silva, M. (2023*). Indoor environmental quality in offices and risk of health symptoms: A review.* Building and Environment, 237, 110360.

UNIT IV: Environment and Safety Management

- Ministry of Labour & Employment, Government of India. (2025). *Key features of the OSH Code, 2020: Implementation primer*. India Briefing.
- PQRI. (2015). *HAZOP guide: Best practices for hazard and operability studies*. Product Quality Research Institute.
- Six Sigma Development Solutions. (2025). *8 pillars of total productive maintenance (TPM): A practical guide for manufacturing and facilities.* SixSigmaDSI.

Suggested Readings:

- Allen, J. G., & Macomber, J. D. (2020). *Healthy buildings: How indoor spaces drive performance and productivity.* Harvard University Press. library
- Burroughs, H.E.& Hansen, S. J. (2011*). Managing Indoor Air Quality*, 5th Edition.
- Datta, A., Kumar, P., Sharma, A., & Patel, D. (2023). *Indoor environmental quality in Indian non-residential buildings: Implications for occupants' health and comfort*. Building and Environment, 242, 110550.
- Green, R., & Parry, M. (2022). Built environment, climate resilience, and health: An emerging research agenda. *Journal of Environmental and Public Health*, Article 8897654.

- Mirzaei, N., Arfaei, N., & Yarahmadi, H. (2020). The impact of indoor environmental quality of green buildings on occupants' health: A systematic review. *Journal of Community Health Research,* 9(1), 54–65.
- REHVA. (2023). Indoor environmental quality and healthy buildings. *REHVA Journal.*

Journal articles (highly cited and relevant)

- Kent, J., & Thompson, S. (2012). Health and the built environment: Exploring foundations for a new interdisciplinary profession. *Health Promotion Journal of Australia,* 23(3), 163–170.
- World Health Organization, & UN-Habitat. (2011*). The built environment and health: An evidence review.* World Health Organization.
- Sharma, M., Khare, M., & Singh, S. (2025). Indoor particle number concentration measurements and associated exposure in Indian urban buildings. *Sustainable Cities and Society,* 112, 105084

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

DISCIPLINE SPECIFIC ELECTIVE

SOCIAL DESIGN METHODS AND RESEARCH

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Social Design Methods and Research	**4**	**3**	**0**	**1**	**As per admission norms**	**Nil**

Learning Objectives

- To understand the foundations, evolution, and global relevance of social design in addressing poverty, inequality, and sustainability.
- To learn key principles of human-centered, participatory, and inclusive design for working with diverse and marginalized communities.
- To gain knowledge of qualitative and quantitative research methods, ethical considerations, and their role in social design.
- To explore social innovation, systems thinking, CSR, and sustainability as frameworks for designing socially impactful solutions.

Learning Outcomes

- Students will be able to explain core concepts of social design, including its evolution, purpose, and relevance to contemporary social challenges.
- Students will demonstrate an understanding of inclusive and participatory design principles and their application to marginalized groups.
- Students will understand and differentiate qualitative and quantitative research methods and apply ethical considerations in design research.
- Students will be able to analyse social innovation models, CSR initiatives, and sustainability concepts to evaluate socially responsible design practices.

THEORY

(Credits 3; Hours 45)

UNIT I: Foundations of Social Design and Inclusive Research 11 Hours

This unit introduces the basics of social design, highlighting inclusive principles and ethical research methods for understanding social needs.

- Social Design Overview: Definition, evolution, and global challenges (poverty, inequality, sustainability)
- Design Principles: Human-centered, participatory, and inclusive design for social impact
- Research Methods: Integrating qualitative and quantitative methods; ethical considerations in social design.

UNIT II: Inclusivity, CSR, and Traditional Knowledge in Social Design 11 Hours

This unit focuses on designing for marginalized groups while integrating CSR practices and preserving traditional design knowledge.

- Inclusivity in Design: Designing for marginalized groups (elderly, differently-abled, low-income).
- Corporate Social Responsibility (CSR): Role of design in CSR for social well-being and environmental responsibility.
- Preserving Traditional Designs: Safeguarding indigenous practices and integrating traditional knowledge in modern design.

UNIT III: Social Innovation, Systems Thinking, and Sustainability 11 Hours

This unit explores how design drives social innovation through systems thinking and sustainable approaches with measurable impact.

- Social Innovation: Design's role in driving social change and addressing societal needs.
- Design Thinking & Systems Thinking: Approaches for creating scalable, sustainable solutions.
- Sustainability: Environmental, social, and economic sustainability in design projects; measuring social impact with assessment tools.

UNIT IV: Applications of Social Design in Communities and Public Spaces

12 Hours

This unit examines practical applications of social design in communities, public spaces, CSR initiatives, and advocacy.

- Community Empowerment: Engaging communities in participatory design for sustainable solutions.
- Inclusive Public & Health Spaces: Designing safe, accessible public spaces and environments that enhance physical and mental well-being.
- CSR & Advocacy in Design: CSR-based interventions (education, housing, sustainability) and using design for policy influence, social justice, and human rights.

PRACTICAL

(Credits 1; Hours 30)

1. Structured user research and insight building: Conduct surveys, interviews, focus groups, or mapping exercises to understand user needs, barriers, and aspirations; compile key insights.
2. Engagement with traditional craftspersons: Interact with traditional Indian artisans to learn about cultural knowledge, heritage practices, materials, and context-based design wisdom.
3. Participatory design and idea co-creation: Facilitate a co-design session with peers or mock community members to collaboratively generate and refine possible solution directions.
4. Concept framing and visual representation: Develop concept directions through sketches, storyboards, user journey maps, or design briefs to communicate proposed solutions.
5. Assessment of inclusivity and social relevance: Evaluate concept ideas for accessibility, inclusivity, feasibility, cultural sensitivity, and relevance to difference marginalized groups.
6. Feedback collection, refinement, and final presentation: Gather feedback through discussions or walkthroughs, refine the proposed solutions, and present the final concept with justification based on user insights and social impact.

Essential Readings

UNIT I:

This unit introduces the basics of social design, highlighting inclusive principles and ethical research methods for understanding social needs.

- Manzini, E. (2015). Design, when everybody designs: An introduction to design for social innovation. MIT Press.
- Brown, T., & Wyatt, J. (2009). Design Thinking for Social Innovation. Stanford Social Innovation Review, 8(1), 31–35. https://doi.org/10.48558/58Z7-3J85

UNIT II:

This unit focuses on designing for marginalized groups while integrating CSR practices and preserving traditional design knowledge.

- Noel, L.-A. (2023). *Design social change: Strategies for equity, inclusion, and belonging*. Ten Speed Press.
- National Institute of Urban Affairs. (2020). *An accessible, safe and inclusive city*. NIUA, Government of India.
- Ministry of Culture, Government of India. (2019). *Scheme for safeguarding the intangible cultural heritage*. Government of India.
- National Institute of Design. (2017). *Craft traditions of India*. National Institute of Design.
- Papanek, V. (2009). Design for the real world: Human ecology and social change (2nd ed.). Thames & Hudson.

UNIT III:

This unit explores how design drives social innovation through systems thinking and sustainable approaches with measurable impact.

- Manzini, E. (2015). Design, when everybody designs: An introduction to design for social innovation. MIT Press.
- Halse, J., Brandt, E., Clark, B., & Binder, T. (2010). Rehearsing the future: Social design experiments in innovation and democracy. Danish Design School Press.

UNIT IV:

This unit examines practical applications of social design in communities, public spaces, CSR initiatives, and advocacy.

- Amatullo, M., Boyer, B., May, S., & Shea, A. (Eds.). (2023). Design for social innovation: Case studies from around the world. Routledge.
- Government of India. (2015). *Accessible India campaign (Sugamya Bharat Abhiyan)*. Ministry of Social Justice and Empowerment.
- IDEO.org. (2015). The field guide to human-centered design. IDEO.org.
- Steinfeld, E., & Maisel, J. L. (2012). *Universal design: Creating inclusive environments*. Wiley.

Suggested Readings

- Melles, G. (Ed.). (2022). *Designing social innovation for sustainable livelihoods*. Springer.
- Denzin, N. K., & Lincoln, Y. S. (Eds.). (2018). The SAGE handbook of qualitative research (5th ed.). SAGE.
- Silverman, D. (2017). Doing qualitative research (5th ed.). SAGE.
- Muratovski, G. (2016). Research for designers: A guide to methods and practice. SAGE.
- Martin, B., & Hanington, B. M. (2012). Universal methods of design: 100 ways to research complex problems, develop innovative ideas, and design effective solutions. Rockport.

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

SEMESTER II

DISCIPLINE SPECIFIC CORE COURSE
ENTREPRENEURSHIP & ENTERPRISE MANAGEMENT

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Entrepreneurship & Enterprise Management	**4**	**2**	**0**	**2**	**As per admission norms**	**Nil**

Learning Objectives

- To build an innovative and entrepreneurial mindset among students
- To strengthen skills in opportunity identification, problem analysis, communication, and strategic planning for enterprise development
- To equip students with practical tools for designing, managing, marketing, and scaling new ventures
- To help students understand and apply concepts of business modelling, financial planning and resource management
- To enable students to assess legal, ethical, and sustainability considerations while developing entrepreneurial interventions at local and national levels

Learning Outcomes

After completing the course, students should be able to:

- Understand the fundamental of entrepreneurship, opportunity recognition, and innovation in entrepreneurship
- Apply the principles of entrepreneurship to design and evaluate new and innovative ventures.
- Analyse market insights, funding options, legal landscape and compliance needs that are essential to make informed business decisions
- Develop skills needed to manage, grow and sustain an enterprise

THEORY

(Credits 2; Hours 30)

UNIT I: Innovation and Entrepreneurship 7 Hours

This unit covers core ideas of innovation and entrepreneurship. It helps students understand how opportunities emerge, how creative thinking supports problem solving and how new ventures begin to take shape in different sectors.

- Nature and scope of entrepreneurship
- Innovation as a driver of opportunity, Types of innovation (product, process, business model, social)
- Entrepreneurial mindset, creative problem-solving, opportunity recognition and evaluating market potential
- Basics of new venture creation

UNIT II: Emerging Trends, Technology, and Enterprise Development 7 Hours

This unit explores the technological and market shifts that influence today's enterprises. It highlights how design practices and sustainability trends open new ventures.

- Technology disruptions shaping modern markets
- Innovation ecosystems: incubators, accelerators, and industry clusters
- Sustainability-driven and design-driven entrepreneurship
- Product development pathways and role of design thinking

UNIT III: Business Modelling, Planning, and New Venture Creation 7 Hours

This unit focuses on the practical process of shaping a new venture. It gives students the foundation to plan and launch viable enterprises by highlighting on customer research, value proposition, and business model development.

- Identifying a problem or market opportunity
- Process of launching a new venture- market research, analysis and segmentation
- Value proposition design, feasibility analysis, forming a team, leadership skills
- Preparing a structured business plan, risk assessments, pitfalls, and strategies for execution and growth

UNIT IV: Financial and legal aspects in Enterprise management 9 Hours

This unit outlines how new ventures secure and manage financial resources. It explains funding sources and valuation process. The unit highlights legal and ethical issues in enterprise management.

- Government schemes, grants, and entrepreneurial financial support systems
- Basics of valuation for early start-ups
- Tax considerations for new ventures, major hidden tax traps in business
- Intellectual Property Rights: patents, copyrights, trademarks, design rights, trade secrets
- Common legal and ethical pitfalls when starting a business

PRACTICAL

(Credits 2; Hours 60)

1. **Self-Assessment of Entrepreneurial Competencies:** Assessment and profiling of entrepreneurial competencies using validated assessment tools such as the Personal Entrepreneurial Competencies (PEC) framework, Locus of Control scale, and Creativity/Innovation. Write a short reflective report to summarise key findings.

2. **Opportunity Mapping and Venture Ideation:** Identify a need or challenge within a community, institution, or market segment through field observation, interviews, or secondary research. Analyse user behaviour, pain points, and existing solutions. Based on the findings, propose 2–3 opportunity areas and justify entrepreneurial potential. Present insights using simple tools such as empathy maps, need statements, or opportunity grids.
3. **Design-thinking and product/solution sketch:** Select one opportunity from the studio and conduct a mini design-thinking cycle: empathise with users via brief interviews, define a clear problem statement, and ideate multiple solution options. Develop a low-fidelity prototype (storyboard, paper interface, or service blueprint)

and document how sustainability, inclusivity, and usability were considered; highlight which competencies—such as creativity, persistence, and communication—shaped the final concept. Present outputs as empathy maps, "how-might-we" statements, and annotated sketches of the proposed product or service.

4. **Business Model and Financial Planning Exercise:** Prepare a viable business proposal. Define the value proposition, customer segments, channels, revenue streams, and key resources. Estimate basic cost components, prepare a simple budget, and calculate preliminary financial projections such as break-even point and cash-flow requirements. Suggest suitable funding sources for the venture based on scale, stage, and feasibility.

5. **Venture pitch and ecosystem exposure**: Interact with founders or managers to learn about challenges, ecosystem support, and growth strategies. Based on the entire practical work, prepare a structured pitch deck and present the venture idea, prototype, market justification, business model, and financial plan.

6. **Financial, legal and ethical readiness brief for start-ups**: Develop a 2–3 page brief for your proposed venture that outlines expected cost heads, tentative revenue streams, and feasible funding avenues such as government schemes, grants, or early-stage investors. Identify at least two legal and ethical risk areas (e.g., IP protection, tax compliance, advertising claims, data privacy) and propose preventive measures that reflect responsible entrepreneurial behaviour and commitment to long-term sustainability. Present the brief as structured sections or a checklist-based template suitable for early-stage founders.

Essential Readings

UNIT I

- Chhabra, T. N. (2024). *Entrepreneurship development. Sun* India Publication.
- **Desai, V. (2022).** *Dynamics of entrepreneurial development and management* (6th ed.). Himalaya Publishing House.

- **Gupta, A., & Srinivasan, R. (2020).** *Entrepreneurship development* (1st ed.). Oxford University Press India.
- **Khanka, S. S. (2021).** *Entrepreneurial development* (2nd ed.). S. Chand Publishing.
- **Tiwari, R., & Bhat, S. (2023).** *Entrepreneurship in India* (2nd ed.). McGraw Hill Education (India).

UNIT II

- **Nair, A., & Pandey, S. (2023).** *Innovation and entrepreneurship*. Bloomsbury India.
- Vaish, V. (2025). *India business guide: Startup to set-up*. Commercial Law Publishers.

UNIT III

- Hisrich, R. D., Peters, M. P., & Shepherd, D. A. (2025*). Entrepreneurship (12th ed.).* McGraw-Hill Education.
- Meyer, M. H., & Crane, F. G. (2024). *New venture creation: An innovator's guide to entrepreneurship (2nd ed.).* SAGE College Publishing.
- Puri, G. (2022). *Entrepreneurship: New venture creation*. SSDN Publishers.

UNIT IV

- **Agarwal, R., & Goyal, M. (2023).** *Start-up law and compliance in India*. Taxmann Publications.
- **Bansal, C. L. (2022).** *Taxation of business entities*. Taxmann Publications
- **Ganguli, P. (2020).** *Intellectual property rights* (3rd ed.). Tata McGraw-Hill Education.
- **Kumar, R., & Sharma, S. (2021).** *Financial management for entrepreneurs*. Taxmann Publications.
- **Sidana, N. (2024).** *Ethics, governance and compliance*. Bloomsbury India.

Suggested Readings

- Bhidé, A. (2023). *The venturesome economy: How innovation sustains prosperity in a more connected world.* Princeton University Press.

- Campbell, C. C. (2025). *Start. Scale. Exit. Repeat: The playbook for aspiring serial entrepreneurs.* Wiley.
- Holt, D. H. (2024). *Entrepreneurship: New venture creation (Updated ed.).* Pearson.
- Kuratko, D. F. (2021). *Entrepreneurship: Theory, process, and practice (12th ed.).* Cengage Learning.
- Liedtka, J., & Ogilvie, T. (2023*). Design thinking: A comprehensive textbook*. Wiley India.
- Radjou, N., Prabhu, J., & Ahuja, S. (2024). *Jugaad innovation: Think frugal, be flexible, generate breakthrough growth.* Random House India.

Journals articles (highly cited and relevant)

- Dell'Era, C., & Verganti, R. (2023). Design thinking for entrepreneurship: An explorative inquiry into its application in practice. *The Design Journal,* 26(6), 987–1005
- Lal, M., & Thakur, S. (2025). Entrepreneurial education in emerging economies: A bibliometric analysis. *The IUP Journal of Entrepreneurship Development*, 22(3), 59–81.
- Murad, M., et al. (2024). The role of opportunity recognition, entrepreneurial social capital and education in shaping entrepreneurial intention. *International Journal of Management Education,* 22(3), 100872.
- Ratten, V. (2023). Entrepreneurship: Definitions, opportunities, challenges, and future research directions. *Journal of Organisational Effectiveness: People and Performance*, 10(3), 245–262.
- Roy, B., & Shakya, A. (2025). Make in India: Manufacturing policy and sectoral performance. *The IUP Journal of Entrepreneurship Development*, 22(2), 28–45.

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

DISCIPLINE SPECIFIC CORE COURSE
FINANCIAL PLANNING AND ACCOUNTING PRACTICES

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Financial Planning and Accounting Practices	**4**	**3**	**0**	**1**	**As per admission norms**	**NIL**

Learning Objectives

To provide basic knowledge regarding multiple accounting and financial aspects to students.

Learning Outcomes

1. Knowledge about principles and techniques of accounting information for decision-making and control
2. Acquire skills in the use of tools, techniques and processes of financial management in the realm of financial decision-making.

THEORY

(Credits 3; Hours 45)

UNIT I: Introduction to financial accounting and financial management 10 Hours

- Concept, nature, and scope of financial accounting
- Financial accounting – generally accepted accounting principles (GAAP)
- Accounting process and system- journal, ledger& trial balance
- Cost accounting and Management accounting
- Objectives, nature and scope of financial management

UNIT II: Financial Statements & tools of financial analysis 10 Hours

- Preparations of Profit and Loss accounts and Balance sheets
- Long-term Assets and Depreciation / Inventory

- Tools of financial analysis: Fund flow analysis and Cash flow analysis, Ratio analysis, Cost volume profit (break-even) analysis, Analysis of operating and financial leverages

UNIT III: Cost Accounting 15 Hours

- Costing fundamentals: Cost concepts & classifications, Materials, Direct Labour and Direct Expenses, Overheads general, Overheads Distributions
- Costing for Specific Industries: Single or Output costing, Job, Batch and Contract costing, Process Costing, Operating costing
- Costing for Control: Budgetary control, Standard costing & Variance analysis, Marginal costing & Cost volume profit analysis

UNIT IV: Management Accounting and Financial Planning 10 Hours

- Raising long-term funds: Planning capital structure, Internal financing, Gaining access to Angel funding, Venture capital funding and Business loans.
- Managing short-term finance: Management of Working capital, Management of Inventories

PRACTICAL

(Credit 1; Hours 30)

1. Journal Entries and the Accounting Cycle

Record a series of business transactions in a general journal using the double-entry bookkeeping method.

2. Financial Statement Preparation

Prepare a complete set of financial statements (Income Statement, Balance Sheet, and Cash Flow Statement) using provided internal data for a fictional company.

3. Cost-Volume-Profit Analysis

Conduct a cost-volume-profit (CVP) analysis for a company offering a specific product or service, including breakeven analysis.

4. Depreciation Accounting

Hands-on activities for calculating depreciation using various methods.

5. Inventory Valuation

Calculate inventory balances using different methods such as FIFO (First In, First Out), LIFO (Last In, First Out), and Weighted Average.

6. Analysis and Interpretation of Financial Statement

Analyse the financial statements of a publicly traded company over the last three years.

7. Ratio Analysis

Analyse company performance by calculating key financial ratios (liquidity, profitability, efficiency, and solvency ratios) from the provided financial statements.

8. Fund Flow Analysis

Examination of real-world scenarios to illustrate fund flow analysis in practice.

9. Requirements of Working Capital

Analysing the working capital management practices of selected companies to identify best practices.

Essential Readings:

UNIT I:

- Tulsian. P. C. (2023). *Financial Accounting.* Pearson Education Narayanswami.
- Maheshwari S.N. & Maheshwari S. K. (2020). *An Introduction to Accountancy*. Vikas, 9th Edition.

UNIT II:

- Bhattacharya, A. K. (2020). *Essentials of Financial Accounting*. PHI, New Delhi.
- Brealey, A. R., Myers, C. S., Allen, F., Edmans, A., Mohanty, P. (2023), Principles of Corporate Finance, McGraw-Hill.
- Chandra, P. (2023). *Financial Management: Theory and Practice*. New Delhi: Tata McGraw Hill Publishing
- Ghosh. T. P. (2025). Indian *Accounting Standards & Corporate Standard Practices*. Taxman, 10th Edition.

UNIT III:

- Anthony, A. (2016). *Management Accounting*. London: Prentice Hall
- Mukherjee (2020). *Financial Accounting for Management.* TMH, 1st Edition.
- Ramchandran & Kakani. (2017). *Financial Accounting for Management.* TMH, 2nd Edition.
- SN Maheshwari & SN Mittal (2020), *Cost Accounting Principles &Practice*, A Mahavir Publication.

UNIT IV:

- Horngren, Charles T. (2014). *Introduction to Management Accounting*. New Delhi: Prentice Hall of India Private Ltd
- Kimmel. P.D. (2021). *Financial Accounting: Tools for Business Decision Making*. New York: John Wiley & Sons

Suggested Readings:

- Anthony, A. (2001). *Management Accounting*. London: Prentice Hall
- Bhattacharya, A. K. (2007). *Essentials of Financial Accounting*. PHI, New Delhi.

- Chandra, P. (2001). *Financial Management: Theory and Practice*. New Delhi: Tata McGraw Hill Publishing
- Damodaran, A. *Corporate Finance: Theory and Finance*. New York: John Wiley
- Ghosh. T. P. (1998). *Accounting and Finance for Managers*. Taxman, 1st Edition.
- Horngren, Charles T. (2001). *Introduction to Management Accounting*. New Delhi: Prentice hall of India Private Ltd
- Kimmel. P.D, (2000). *Financial Accounting: Tools for Business Decisions Making*. New York: John Wiley & Sons
- Maheshwari S.N. & Maheshwari S. K. (2007). *An Introduction to Accountancy*. Vikas, 9th Edition.
- Mukherjee. (2009). *Financial Accounting for Management.* TMH, 1st Edition.
- Ramchandran & Kakani. (2007). *Financial Accounting for Management.* TMH, 2nd Edition.
- Tulsian. P. C. (2008). *Financial Accounting.* Pearson Education Narayanswami.
- www.everant.org Account and Financial Management Journal(2020),Volume 5.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
ENERGY POLICY, SYSTEMS AND SUSTAINABILITY

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Energy Policy, Systems and Sustainability	**4**	**2**	**0**	**2**	**As per admission norms**	**Nil**

Learning Objectives

- To understand the global and Indian scenario of energy demand and supply
- To learn about the impact of energy consumption on the environment and climate change
- To understand the different types of energies, their availability and potential with emphasis on the renewable sources of energy
- To learn about the policies and legislative frameworks in India and globally, pertaining to the energy sector including key stakeholders
- To learn about energy conservation, benefits and challenges faced, energy audits and energy management

Learning Outcomes

After completing the course, students will be able to:

- Understand the global and Indian scenario of energy demand and supply
- Understand the impact of energy consumption on the environment and climate change
- Appreciate the different sources of energy and their availability
- Understand the global and Indian policy structure for the energy sector
- Understand energy conservation, audit and management

THEORY

(Credits 2; Hours 30)

UNIT I: Energy Sources: Global and Indian Energy Scenario 7 Hours

This unit throws light on the energy scenario in India and globally, impact of energy on economic development and the need for renewable energy sources.

- Energy resources and consumption in residential, commercial and institutional sector; relationship between energy and environment
- Role of energy in economic development and social transformation
- Energy sources, overall energy demand and availability
- Depletion of energy sources and its impact, need for renewable sources of energy
- Energy use and global climate change, GHG emissions, climate change debate

UNIT II: Energy Systems and Technologies 8 Hours

This unit focuses on present status and future prospects of various energy sources. It also focuses on the different conventional and renewable sources of energy.

- Conventional energy sources: sources, issues and challenges, applications, current status, advantages and disadvantages, technologies, future prospects
- Non-conventional energy sources: need, sources, current status, significance, technologies, applications, challenges and opportunities

UNIT III: Energy policy, legislative framework and energy strategy 7 Hours

This unit throws light on the Indian and global energy policy scenario.

- History of energy policy, International Energy Policies, international treaties and protocols
- Legislations guiding energy sector in India
- Energy Policy Issues
- Power sector reforms, restructuring of energy supply sector, energy strategy for future

UNIT IV: Energy Conservation and Auditing 8 Hours

This unit throws light on energy conservation, energy audit and management.

- Energy conservation measures across different consumer segments, benefits of energy conservation on economy and environment
- Challenges faced in energy conservation
- Techniques and strategies for reducing and managing energy use across industrial, commercial, agricultural, and domestic sectors
- Energy audits, technologies used in auditing, structure and components of energy audit reports

PRACTICAL

(Credit 2; Hours: 60)

- Conducting energy audits, optimizing energy usage in commercial, institutional and residential units through energy efficiency and use of renewable energy
- Government initiatives in renewable energy, legislative framework in the energy sector - Analysis through policy implementation, feedback from stakeholders etc.
- Calculation of solar rooftop potential using various applications/websites
- Energy conservation and efficiency - Analysis of the current scenario through primary and secondary review etc.
- Designing/developing and conducting training/awareness generation programme on energy management/renewable energy for different target groups
- Renewable energy project management through softwares

Essential Readings:

UNIT I:

- Yang, P. (2024). *Renewable Energy: Challenges and Solutions.* Springer.
- Paritosh, & Jain, A. (2023). *Energy Scenario in India*. Book World.

UNIT II:

- Deo, P., Chatterjee, S. K., & Modak, S. (2024). *Renewable Energy in India: Economics and Market Dynamics.* Atlantic Publishers & Distributors.
- Raj, D., Verma, A. K., Singh, A., & Kulkarni, A. (2024). *A Text Book Of Renewable Energy & Green Technology.* Book Rivers.
- Bollin, E. (2023). *Using Renewable Energies in Buildings: Heating and Cooling Supply, Automation, Executed Examples.* Springer.

UNIT III:

- Mital, M., & Gupta, P. (Eds.). (2025). *Environmental Studies: Resources and Sustainability - A Textbook and Practical Manual.* Elite Publishing.
- Sharma, A. (2024). *India's Quest for Energy Security: India's Roadmap to becoming an Energy Independent Nation.* Notion Press.
- Thapar, S. (2024). *Renewable Energy: Policies, Project Management and Economics.* Springer.

UNIT IV:

- Saxena, B. (2024). *Essentials Of Energy Management and Audit*. BFC Publications Pvt Ltd
- Sethuraman, A. (2020). *Practical Guide to Energy Conservation & Management.* Notion Press.

Suggested Readings:

- Kanoglu, M., Cengel, Y. A., & Cimbala, J. M. (2020). *Fundamentals and Applications of Renewable Energy.* McGraw Hill.
- International Energy Agency (2017). *Energy Technology Perspectives 2017*. Paris, International Energy Agency.
- Kothari, P., Singal, K. C., & Ranjan, R. (2008). *Renewable Energy Sources and Emerging Technologies.* PHI Pvt. Ltd.: New Delhi.
- Kishore, V. V. N. (2008). *Renewable energy engineering and technology – A knowledge compendium.* TERI Press: New Delhi.

- Kreith, F., & Yogi Goswami D. (2007). *Handbook of Energy Efficiency and Renewable Energy*. CRC Press.

Journal Articles (highly cited and relevant)

- Bhattacharyya, S. C. (2018). India's energy policies: Past, present, and future. *Energy Policy*, *117*, 303–318.
- Kumar, A., Gaur, S., & Kr, M. (2010). Renewable energy in India: Current status and future potentials. *Renewable and Sustainable Energy Reviews*, *14*(8), 2434–2442.
- Bhandari, D., Bansal, S., & Baveja, S. (2018). The perform, achieve and trade scheme in India: An effectiveness analysis. *Renewable and Sustainable Energy Reviews*, *96*, 387–396.
- Thapar, S., & Verma, A. (2016). Economic and environmental effectiveness of renewable energy policy instruments: Best practices from India. *Renewable and Sustainable Energy Reviews*, *66*, 487–498.
- Purohit, I., & Purohit, P. (2019). Wind energy development and policy in India: A review. *Energy Policy*, *125*, 302–321.
- Painuly, J. P. (2006). A review of energy conservation initiatives by the Government of India. *Energy Policy*, *34*(18), 3769–3782.

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

DISCIPLINE SPECIFIC ELECTIVE
ERGONOMICS AND OCCUPATIONAL SAFETY MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Ergonomics and Occupational Safety Management	**4**	**3**	**0**	**1**	**As per admission norms**	**Nil**

Learning Objectives

- Understand the principles of human-machine systems and their role in optimizing worker performance and safety.
- Analyze the impact of work posture and stress on health, productivity, and ergonomics.
- Learn techniques for ergonomic task analysis, risk assessment, and hazard management in the workplace.
- Explore modern trends in occupational safety, ergonomic design, and strategies to reduce health risks.
- Understand the integration of health regulations and ergonomic practices to enhance worker well-being and safety.

Learning Outcomes

- Demonstrate understanding of human-machine systems and how to align tasks with human capabilities to reduce strain.
- Analyze the impact of occupational stress, work posture, and ergonomic risk factors on health and productivity.
- Apply ergonomic task analysis and risk assessment techniques to identify and manage workplace hazards.

- Explore modern trends in ergonomics, focusing on stress reduction, posture improvement, and long-term health benefits.
- Understand occupational safety and health regulations and how ergonomic design enhances worker protection and compliance with standards.

THEORY

(Credits 3; Hours 45)

UNIT I: Occupational Stressors in the Workplace 15 Hours

This unit focuses on identifying workplace stressors at home, office and industrial setups, underst anding MSDs and their causes, and examining safety practices guided by OSHA and NIOSH.

- Occupational stress -Physical Discomfort and Strain, Environmental Stressors, Mental and Emotional Stress, Organizational Factors
- Musculoskeletal Disorders (MSDs) in the Workplace: Definition, Types, and Causes
- Preventing Musculoskeletal Disorders (MSDs) in the Workplace-
  -Health monitoring protective equipment
  -safe work practices
  -safety of equipment
- Occupational safety analysis-OSHA, NIOSH

UNIT II: Ergonomic Factors and Workstation Design 10 Hours

This unit provides an overview of ergonomic design elements, risks associated with poorly designed workstations, and approaches to creating safer, more efficient work environments.

- Ergonomic factors in the design of workplace, equipment and tools, Influence of ergonomic design on worker health and productivity, Hazards associated with poor designed workstations
- Strategies for improving workstation and equipment design for optimal comfort and safety

UNIT III: Kinesiological and Biomechanical Concepts in Work Posture

12 Hours

This unit covers the fundamentals of kinesiology and biomechanics, the importance of proper work posture, and the types of postures for various occupational tasks.

- Kinesiology and biomechanics, human leverage system and its mechanical benefits
- Importance of proper work posture
- Types of work postures for various tasks
- Application of biomechanics in occupational safety- to prevent accidents and reduce physical stress on workers.

UNIT IV: Risk Assessment in Occupational Ergonomics 8 Hours

This unit deals with applying subjective and objective ergonomic assessments to improve worker posture, safety, and efficiency.

Subjective and objective assessment- Postural analysis tools (REBA (Rapid Entire Body Assessment), RULA (Rapid Upper Limb Assessment), and OWAS (Ovako Working Posture Analysis System), WERA (Workplace Ergonomics Risk Assessment)

PRACTICAL
(Credits 1; Hours 30)

1. Task analysis for the selected occupation

   - Identify and describe the specific tasks involved in the selected occupation

   -Task Categorization -physical demands (e.g., sitting, standing, lifting), mental effort (e.g., decision-making, problem-solving), and repetitive actions (e.g., typing, data entry).

   -Task Duration and Frequency

   -Tools and Equipment required to perform the task

2. Postural and Risk Assessment

   -Observe and document the postures that user adopt while performing each task

   -Use postural evaluation tools such as (REBA (Rapid Entire Body

Assessment), RULA (Rapid Upper Limb Assessment), and OWAS (Ovako Working Posture Analysis System),WERA (Workplace Ergonomics Risk Assessment) to objectively assess the risk of musculoskeletal disorders (MSDs) related to posture.

3. Designing workstation/equipment based on ergonomic assessment and Occupational safety analysis of the selected workplaces
4. Design OSHA/NIOSH safety and health checklist

Essential Readings

UNIT I:

This unit focuses on identifying workplace stressors at home, office and industrial setups, understanding MSDs and their causes, and examining safety practices guided by OSHA and NIOSH.

- Sarma, A. M. (2025). *Occupational health and safety at work*. Himalaya Publishing House.
- Satapathy, S., Realyvásquez Vargas, A., & Mishra, M. (2023). *Occupational Health Safety Factors and Their Impact on the Mental Health of Workers*. Springer Singapore.
- Bridger, R. (2017). *Introduction to Human Factors and Ergonomics*. CRC Press.

UNIT II:

This unit provides an overview of ergonomic design elements, risks associated with poorly designed workstations, and approaches to creating safer, more efficient work environments.

- Salvendy, G. (2012). *Handbook of Human Factors and Ergonomics*. John Wiley & Sons.
- Tosi, F. (2019). *Design for Ergonomics*. Springer Nature.
- Steidl, R.E. & Bratton, E.C. (1968). *Work in the Home*. John Wiley & Sons Inc.

UNIT III:

This unit covers the fundamentals of kinesiology and biomechanics, the importance of proper work posture, and the types of postures for various occupational tasks.

- Koley, S. (2024). *Textbook of biomechanics*. AITBS Publishers, India.

- G, P. Kumar, & De Souza, I. G. (2022). *Textbook of biomechanics & kinesiology: Detailed analysis of musculoskeletal structure and function*. Jaypee Brothers Medical Publishers.
- Chakrabarti, D. (1997). *Indian Anthropometric Dimensions for Ergonomic Design Practice*. National Institute of Design.

UNIT IV:

This unit deals with applying subjective and objective ergonomic assessments to improve worker posture, safety, and efficiency.

- Mukhopadhyay, P. (2022). *Ergonomics principles in design: An illustrated fundamental approach*. CRC Press/Taylor & Francis Group.
- Ray, P. K., & Maiti, J. (Eds.). (2018). *Ergonomic design of products and worksystems: 21st century perspectives of Asia*. Springer.

Suggested Readings:

- Hedge, A. (2016). *Ergonomic Workplace Design for Health, Wellness, and Productivity*. CRC Press.
- Stanton, N. A., Hedge, A., Brookhuis, K., Salas, E., & Hendrick, H. W. (2004). *Handbook of Human Factors and Ergonomics Methods*. CRC Press.
- Helander, M. (2005). *A Guide to Human Factors and Ergonomics* (2nd ed.). CRC Press.

  Shorrock, S., & Williams, C. (2016). *Human Factors and Ergonomics in Practice: Improving System Performance and Human Well-Being in the Real World*. CRC Press.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

POLICIES AND TECHNOLOGIES FOR WASTE MANAGEMENT

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Policies and Technologies for Waste Management	**4**	**2**	**0**	**2**	**As per admission norms**	**Nil**

Learning Objectives

- To understand the problems different types of wastes
- To gain insights into various aspects of waste management
- To understand the policy structure for waste management in the country
- To learn about the environment and health impacts of waste mismanagement

Learning Outcomes

After completing the course, students will be able to:

- Understand the problems associated with wastes
- Understand the various aspects of waste management
- Understand the policy framework for waste management in India
- Understand the environment and health impacts of waste mismanagement

THEORY

(Credits 2; Hours 30)

UNIT I: Waste management: Global and Indian Scenario 7 Hours

This unit throws light on the waste generation scenario in India and globally, and its impact on environment and health.

- Definition, Types and Categories of Waste
- Sources and types of waste in different countries, associated challenges
- Quantum of waste generated globally and in India
- Need and importance of waste management for homes, institutions, industries and commercial establishments

UNIT II: Policy and Legislative Framework Waste Management 8 Hours

This unit throws light on the Indian and global waste policy scenario.

- International policy scenario for waste management
- Waste management rules in India for MSW, Biomedical waste, e-waste and other hazardous wastes in India
- Extended producer responsibility (EPR)
- Circular Economy and its benefits, Case studies

UNIT III: Technologies for Waste Management 8 Hours

This unit focuses on various technologies for waste management.

- Classification, present scenario of disposal technologies used for waste management
- Waste prevention and 7Rs principles
- Sources, composition, properties, management technologies for different types of wastes – Municipal Solid Waste (MSW), waste water, biomedical waste, hazardous waste, e-waste, industrial waste, agricultural waste, C&D waste, plastic waste, nuclear waste etc.
- Bio-waste – Definition, physicochemical characteristics, sourcing, issue of waste segregation and packaging, food waste, composting technologies, anaerobic digestion (biogas), bio-fuels
- Energy recovery from wastes – RDF, waste to energy plants etc.
- Innovations in waste management

UNIT IV: Environmental and Health Impacts of Waste Mismanagement 7 Hours

This unit explains how improper waste disposal affects ecosystems and human wellbeing.

- Air, water, and soil pollution from open dumping and burning
- Health risks to waste workers, ragpickers, and nearby communities
- Spread of infectious diseases from biomedical and mismanaged waste
- Long-term ecological impacts: contamination of groundwater, biodiversity loss, and toxic exposure

PRACTICAL

(Credit 2; Hours: 60)

- Government initiatives on waste management – Analysis through policy implementation, feedback from stakeholders etc.
- Legislative framework in the waste management sector – Critical analysis with focus on different types of wastes, current market scenario etc.
- Initiatives towards Extended Producer Responsibility (EPR) – Analysis of the current scenario through primary and secondary review etc.
- Designing/developing and conducting training/awareness generation programmes on waste management for different target groups
- Management technologies and innovations for managing different types of wastes in commercial, institutional and residential units – Analysis, review and generation of innovative ideas etc.

Essential Readings:

UNIT I:

- Bhatia, S. (2023). *Solid and Hazardous Waste Management*. Atlantic Publishers and Distributors.
- Natesan, U., & Sumathi, V. R. (2021). *Solid Waste Management in an Indian Scenario*. Grin Verlag.

UNIT II:

- Mital, M., & Gupta, P. (Eds.). (2025). *Environmental Studies: Resources and Sustainability - A Textbook and Practical Manual*. Elite Publishing.

- Sinha, G. N. (2024). *E-Waste Management: Governance and Policy Options.* M/s Bishen Singh Mahendra Pal Singh.
- Ghosh, S. K., Samanta, S., Hirani, H., & Vieira da Silva, C. R. (2022). *Effective Waste Management and Circular Economy: Legislative Framework and Strategies (The Circular Economy in Sustainable Solid and Liquid Waste Management).* CRC Press.

UNIT III:

- Sarkar, R. R. (2023). *Waste to Energy Efficient Municipal Solid Waste Management.* Abhijeet Publications.
- Rathoure, A. K. (2021). *Sustainable Practices for Waste Management.* Discovery Publishing House Pvt. Ltd.
- Panda, H. (2019). *Biomedical Waste: Management, Recycling and Applications.* Discovery Publishing House Pvt. Ltd.

UNIT IV:

- Marfe, G, & Stefano, C. D. (2020). *Risks and Challenges of Hazardous Waste Management: Reviews and Case Studies.* Bentham Science Publishers.

Suggested Readings:

- Cherry, P. M. (2016). *Solid and Hazardous Waste Management*. CBS HB.
- Bhatt, M. S. (2012). *Solid Waste Management: An Indian Perspective.* Synergy Books India.
- Srivastava, M. L. (2012). *Waste Management.* Random Publications.
- Ramachandra, T. V. (2009). *Management of Municipal Solid Waste*. The Energy and Resources Institute.

Journal articles (High Citation Count & Broad Overview)

1. Wilson, K. V., Williams, L. M., Kemp, S. L., Smith, A. D. C., Murphy, S., & Smith, M. P. (2017). Challenges and opportunities associated with waste management in India. *Royal Society Open Science*, *4*(3), 160764.

2. Dwivedy, M., & Mittal, R. K. (2017). Assessment of legislation and practices for the sustainable management of waste electrical and electronic equipment in India. *Renewable and Sustainable Energy Reviews*, *76*, 1245–1254.
3. Prabhakar, A. K., Dong, J. J., & Mees, A. (2022). Plastic waste management in India: Challenges and opportunities. *Sustainability*, *14*(18), 1167.
4. Kamble, S. S., Gunasekaran, A., Gawankar, S. A., & Manupati, V. K. (2023). Smart waste management 4.0: The transition from a systematic literature review on the role of industry 4.0 technologies to a framework for smart waste management. *Waste Management*, *165*, 247–263.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
PROFESSIONAL DESIGN METHODS & START-UPS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Professional Design Methods & Start-Ups	**4**	**3**	**0**	**1**	**As per admission norms**	**Nil**

Learning Objectives

- To introduce students to professional ethics, design practices, and the importance of Intellectual Property Rights (IPR) in design
- To equip students with the knowledge and skills required to conceptualize, initiate, and manage a startup
- To provide an understanding of financial planning, marketing strategies, and branding for design startups
- To develop students' ability to create a professional design portfolio, prepare a business model, and engage in startup simulations
- To prepare students for real-world design challenges through industry observation and practical exercises.

Learning Outcomes

After completing this course, students will be able to:

- Understand the significance of startups and how to identify business opportunities
- Understand professional ethics, design standards, and IPR in design
- Develop skills to conceptualize, analyze, and initiate a startup
- Build a professional design portfolio and pitch startup ideas
- Apply industry insights through observation and hands-on simulation exercises.

THEORY
(Credits 3; Hours 45)

UNIT I: Foundations of Professional Design Practices and Intellectual Property Rights

12 Hours

This unit focuses on professional design practices, real-world project experience, industry collaboration, and safeguarding creative work through Intellectual Property Rights.

- Collaborating with design-related industries (interior, event, landscape, facilities, product development, furniture, upcycling/recycling), focusing on manpower, guidance, product strategies, and design approaches.
- Engaging with real-life projects
- Developing a future-oriented project with commercial potential for a specific industry.
- Building a professional network with relevant industries.
- Understanding the significance and procedures of Intellectual Property Rights (IPR)**,** including patents, copyright, industrial designs, trademarks, service marks, layout designs of integrated circuits, and geographical indications.
- Applying for appropriate IPR to safeguard designs from plagiarism

UNIT II: Initiating a Design Startup **10 Hours**

This unit delves into exploring viable design startup ideas, assessing feasibility, and building a comprehensive professional portfolio.

- Exploring a startup idea or business opportunity through market analysis and understanding consumer needs, including:
  - Developing viable concepts through ideation, conceptualization, and innovation
  - Assessing feasibility in terms of technology, market potential, financial viability, and human resources
- Developing a personal and professional portfolio that reflects technical skills, as well as social, economic, and environmental considerations.

UNIT III: Marketing, and Branding for Design Startups **15 Hours**

This unit highlights marketing, branding, organizational structure, startup registration, problem-solving, and government support for design startups.

- Marketing and branding: market segmentation, USP, brand building

- Identifying structure for the startup organization: sole proprietorship, partnership, limited company, co-operative, franchise or social enterprises
- Identifying challenges and solving problems for a successful startup
- Registration process: selecting a company name, acquiring digital signature certificate (DSC) and Director Identification Number (DIN), filling relevant forms with supporting documents, registration of the startup
- Government programmes and policies supporting startups

UNIT IV: Financial Planning for Design Startups **8 Hours**

This unit covers financial planning, cost estimation, funding sources, legal compliance, and business plan development for design startups.

- Preparing cost estimates for technical, manpower and other resources; recurring and non-recurring; rate of return and break-even analysis; overheads / operational costs
- Financial analysis, support systems and funding: sources of funding, costing and budgeting, formal and informal sources of support, networking
- Legal & ethical compliance: regulations, taxation, business ethics
- Writing a business plan

PRACTICAL
(Credits 1; Hours 30)

1. Interacting with design-related industries (interior products, event design and decor, landscape design, facilities and services management, new product development, furniture design, upcycling, refurbishing, recycling, etc.)
2. Engaging with real-life projects
3. Developing a future project with commercial potential
4. Building a network of collaboration with relevant industries
5. Developing a personal and professional portfolio
6. Enhancing professional skills for presenting design projects
7. Reviewing success stories of startups and enterprises.
8. Preparing a comprehensive business plan for a startup, including financial analysis, legal and ethical compliance, marketing, and branding
9. Registering the startup
10. Executing the startup project

Essential Readings

UNIT I:

This unit focuses on professional design practices, real-world project experience, industry collaboration, and safeguarding creative work through Intellectual Property Rights.

- Ramkumar, M., & Jayakumar, A. (Eds.) (2022). *Intellectual property rights demystified*. New India Publishing Agency.
- Babel, R. (2021). *Laws relating to intellectual property rights in India*. Bloomsbury Professional India.

UNIT II:

This unit delves into exploring viable design startup ideas, assessing feasibility, and building a comprehensive professional portfolio.

- Taneja, H., & Lahiri, S. (2021). *Design thinking for startups: An actionable guide for building innovative businesses*. Wiley.
- Brown, T., & Katz, B. (2020). *Change by design: How design thinking creates new alternatives for business and society* (Revised ed.). Harper Business.
- Soota, A., & Gopalan, S. R. (2021). *Entrepreneurship simplified: From idea to IPO*. Penguin Portfolio.

UNIT III:

This unit highlights marketing, branding, organizational structure, startup registration, problem-solving, and government support for design startups.

- Anantham, M. (2025). *Company Registration: Starting Up in India — A Step- by- Step Guide*. Self- Published/India Business Press.
- Binns, S. (2021). *Building the future: Big team, big ideas, small startups, and how to make them work*. Wiley
- Blank, S., & Dorf, B. (2020). *The startup owner's manual: The step-by-step guide for building a great company* . K&S Ranch.

UNIT IV:

This unit covers financial planning, cost estimation, funding sources, legal compliance, and business plan development for design startups.

- Kawase, M. (2022). *Financial planning for startups: A hands-on guide to launching and managing your business finances*. Routledge.
- Gandhi, S. (2021). *Indian Startups, SMEs, & Financial Literacy: Business finance basics entrepreneurs must know*. Notion Press Media Pvt Ltd

Suggested Readings:

- O'Reilly, C. A., & Tushman, M. L. (2021). *Lead and disrupt: How to solve the innovator's dilemma*. Stanford Business Books.
- Wheeler, A. (2022). *Designing brand identity: An essential guide for the whole branding team* (6th ed.). Wiley.
- Klein, D. (2021). *AI and automation for business growth: Leveraging technology to scale your startup*. Springer.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

INTEGRATING SUSTAINABLE DEVELOPMENT IN PRACTICE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Integrating Sustainable Development in Practice	**4**	**2**	**0**	**2**	**As per admission norms**	**Nil**

Learning Objectives

- To develop an understanding of the integrated and systems-based approach to sustainable development
- To impart skills in applying sustainability frameworks to real-world challenges
- To empower students to design, implement, and evaluate practical sustainability interventions
- To enhance competencies in multi-stakeholder engagement, communication, and evidence-based decision making

Learning Outcomes

After completing the course, students should be able to:

- Understand the connections between social, economic, and environmental issues, and how integrated approaches can address them
- Evaluate the role of various local, national, and international frameworks that drive sustainability transitions
- Apply integrated development approaches to analyse, design, and evaluate sustainability solutions.
- Work effectively with communities, networks, and stakeholders to drive sustainable change.

THEORY

(Credits 2; Hours 30)

UNIT I: Foundations of Sustainable Development in Practice 7 Hours

This unit covers an understanding of integrated sustainable development by linking systems thinking, interdependencies, and cross-sectoral approaches.

- Revisiting Sustainability- from theory to practice
- Interlinkages and inter-dependence between social, economic and environmental issues- Concept of integrated approach to sustainable development
- Case examples of sustainability practice in India and globally

UNIT II: Tools and Methods for Analysing Sustainability Issues 8 Hours

This unit explores practical tools used across sustainable development projects that translate theory into field-level action.

- Problem Tree, Objective Tree, and Causal Analysis
- Stakeholder analysis and mapping
- Synergies and trade-offs assessment
- Baseline studies and rapid rural/urban appraisal
- Prioritising issues and identifying entry points for action

UNIT III: Challenges and Opportunities for Sustainability Solutions 8 Hours

This unit focuses on turning analysis into action. It introduces solution design for real-world challenges and teaches students to plan interventions.

- Drivers and barriers in adopting an integrated approach to sustainable development, such as policy silos, resource constraints, competing priorities, and measuring outcomes
- Opportunities for integration, such as emerging technologies, innovation, public-private partnerships, traditional knowledges, good practices around the globe, etc.

- Approaches: low-carbon development, circular economy, green livelihoods, climate adaptation
- Communicating sustainability to influence behaviour and policy

UNIT IV: Institutionalizing and Monitoring Sustainability 7 Hours

This unit outlines how sustainability practices are embedded within organisations and systems. It highlights processes for integrating sustainability into planning, governance, and decision-making, and introduces methods for tracking and reporting sustainability performance.

- Mainstreaming sustainable development issues into planning processes
- Strategic framework and process for integrated sustainable development-institution building, analysis, creating dialogue, planning, communicating, financing, implementing and monitoring
- Monitoring and evaluation for tracking progress in sustainability projects: characteristics of effective monitoring, challenges.
- National and global reporting systems (NIF, SDG Index, Voluntary National Reviews)

PRACTICAL

(Credits 2; Hours 60)

1. **Community-Based Sustainability Diagnosis:** Study one sustainability issue in a community/campus, map SDG links, and identify gaps to be addressed. Record baseline data for indicators like Waste: bags/day, overflow count/day, segregation accuracy %;
   Water: leak points count, tanker frequency, tap wastage observations;
   Mobility: vehicles/hour, parking occupancy %, average commute time;
   Livelihood: days of work/week, income variability score, access barrier count

2. **Designing a Sustainability Intervention**: Develop an intervention plan for a sustainability challenge. Include solution options, behavioural strategies, resource needs, risk analysis, and expected outcomes. Use ToC or Results Framework for design clarity. It may focus on waste reduction, water conservation, energy

efficiency, campus sustainability, or a community-based initiative.

3. **Implementation of sustainability intervention-** Implement a small-scale sustainability intervention designed in the earlier practical sessions. Carry out planning, mobilisation, and execution steps; document processes; collect simple before–and–after observations or feedback; and reflect on challenges, outcomes, and learning. A short implementation report and presentation will summarise the experience.

4. **Communication for Sustainable Development:** Create a communication product (poster, video, social media content, campaign kit) for a sustainability issue. Identify audience, key messaging, and behaviour-change components. Review campaign effectiveness using simple indicators.

5. **Stakeholder Engagement:** Conduct stakeholder profiling for a sustainability project. Prepare an interest–influence matrix and propose engagement strategies. Analyse potential conflicts, partnerships, and opportunities.

Essential Readings:

UNIT I

- Ghosh, J. (2022). *The making of a sustainable economy: Policies for India's future*. Penguin Random House India.
- Prakasam, N. (2023). *Back to Bharat: In search of a sustainable future*. Penguin Random House India Private Limited.
- United Nations Development Programme (2024). UNDP Sustainable Development Report: Practical pathways for accelerating the SDGs. UNDP Publishing.
- Whitby, A. (2019). *Advancing education for sustainable development: key success factors for policy and practice*. World Future Council Foundation.

UNIT II

- Dhamija, A., Misra, N., & Gogoi, I. S. (2019). *Project logical framework workbook for strategic planning of urban projects (Project logical framework workbook)*. National Institute of Urban Affairs (CITIIS).

- Khosla, A., & Sethi, M. (Eds.). (2023). *Sustainable development in India: Pathways, practices, and policy innovations*. Oxford University Press.
- Ramachandra, T. V., & Sudhira, H. S. (2023). *Sustainable urban planning in India: Integrating environment, economy, and society*. Routledge India.

UNIT III

- Gupta, D. (2025). *Framing India's low carbon development pathways*. Cambridge University Press.
- Nagendra, H., & Mundoli, S. (2023). *Shades of blue: Connecting the drops in India's cities*. Penguin Random House India.

UNIT IV

- Basu, D., Adhikary, M. M., & Biswas, D. (2007). *Participatory monitoring and evaluation of development programmes: Practitioners' guide*. Agrotech Publishing Academy.
- Dhamija, A., Misra, N., & Gogoi, I. S. (2019). *Project logical framework workbook for strategic planning of urban projects* . National Institute of Urban Affairs (CITIIS).
- Karnam, G. (2022). *Public expenditure in India: Policies and development outcomes*. Oxford University Press.
- Sidana, N. (2025). *Viksit Bharat@2047*. Bloomsbury Quest (Bloomsbury Publishing India Pvt. Ltd.).

Suggested Readings

- Blewitt, J. (2023). *Understanding sustainable development (4th ed.).* Routledge.
- Swilling, M., Hajer, M., & Baynes, T. (2023). *Sustainability transitions in practice.* Edward Elgar.
- Steve Bass, David H. Smith and Michael Stanley-Jones (2023). *Sustainable Development in Practice: Integrating Environment, Climate and Poverty Reduction.* United Nations Development Programme–United Nations Environment Programme Poverty-Environment Action: Nairobi.
- Lee, N. and C. Kirkpatrick (Eds). 2000. *Integrated Appraisal and Sustainable Development in a Developing World.* Cheltenham, Edward Elgar.

Journal Articles

- Bandari, R., et al. (2024). *Transdisciplinary approaches to local sustainability and SDGs.* Sustainability Science, *19*, 1293–1312.
- Lella, L., Oses-Eraso, N., & Stamos, I. (2024). *SDG monitoring frameworks for regions.* Ecological Indicators, *166*, 112248.
- Sreenivasan, A., Suresh, M., & Nedungadi, P. (2023). *AHP research linked to SDGs*. Heliyon, 9, e19077.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
DESIGN PROCESSES IN BUILT SPACES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Design Processes in Built Spaces	**4**	**2**	**0**	**2**	**As per admission norm**	**Nil**

Learning Objectives

- Examine methods for urban context analysis, site zoning, microclimate study, and comprehensive movement planning in built environments.
- Cover essential building specifications, NBC requirements, and detailed design parameters for inclusive, universally accessible commercial and residential spaces.
- Outline the processes of project estimation, including material specifications, preparing proposals, managing site sourcing, budgeting strategies, and meeting deadlines.
- Examine the principles of waste management hierarchy, strategies for urban environments, and application of sustainable design for efficient waste handling systems.

Learning Outcomes

The students would be able to:

- Analyze urban context, topographical constraints, and microclimates to develop universally accessible movement and access plans for the built site.
- Apply NBC and Master plan standards to specify building requirements for residential and commercial projects, including specialized retail and event spaces.

- Prepare comprehensive project estimates, define material specifications, manage site sourcing/outsourcing, and document financial records for the construction process.
- Design and implement design solutions for waste management, applying the waste hierarchy and urban planning strategies to minimize environmental impact.

THEORY

(Credits 2; Hours 30)

UNIT I: Urban Site Planning and Contextual Design **8 Hours**

This unit focuses on analysing the urban environment, understanding site constraints, and integrating design solutions that respond to the wider community and infrastructure.

- Urban Context Analysis: Site Selection Criteria, Microclimate Analysis, Site Zoning, and Land Use.
- Site Design and Constraints: Topographical Planning, Utility Integration, Environmental Constraints.
- Movement and Access Planning: Traffic and Pedestrian Flow, Parking Strategy, Universal Accessibility at the Site Level
- Placemaking and Landscape Architecture: Open Space Design, Landscape Strategy,
- Boundary and Edge Conditions

UNIT II: Building Specifications **7 Hours**

This unit focuses on the technical and regulatory aspects of spatial design, covering the development of detailed plans for residential and commercial spaces.

- Building specifications for residential and commercial space design as per NBC, and Master plan
- Specific requirements for designing retail spaces - offices & showrooms
- Space planning for selected events - exhibitions and expos, seminars and conferences areas.

- Design parameters for creating universal spaces with focus on inclusivity (people with special needs, elderly, infants and children).

UNIT III: Project Estimation **8 Hours**

This unit teaches the essential skills for managing the financial and logistical aspects of a design or construction project, ensuring its successful implementation.

- Specifications of materials
- Estimating & budgeting: Types of cost estimations and preparing estimates and budgets
- Proposals & tenders
- Site management - Sourcing/ outsourcing
- Implementation of plan of work and meeting deadlines
- Record keeping & filing

UNIT IV: Waste Management in Urban Spaces **7 Hours**

This unit provides an in-depth look at the principles, strategies, and design applications for managing waste effectively in urban environments.

- Specifications of materials
- Introduction to Waste Management in Urban Environments
- Waste Management Hierarchy and Strategies
- Urban Planning and Waste Management
- Design Applications for Waste Management
- Future Directions and Research

PRACTICAL

(Credits 2; Hours 60)

1. Preliminary Residential Design: Apply building specifications and design principles to create a preliminary architectural design for a residential building.
2. Commercial Space Layout: Design a commercial space (e.g., a retail store, a restaurant, or an office) focusing on specific design requirements and optimizing customer flow.

3. Event Layout Planning: Plan and design the layout for a specific event (e.g., an exhibition, a conference, or a seminar) considering spatial needs and logistics.
4. Small-Scale Cost Estimation: Prepare a detailed cost estimate for a small-scale construction project (e.g., a residential extension or a small commercial building).
5. Project Documentation Development: Develop and maintain all required project documentation for a simulated construction project, ensuring accuracy and completeness.
6. Construction Waste Practice Analysis: Analyze and document the waste management practices currently implemented at a local construction site.
7. Commercial Waste Practice Analysis: Analyze and document the waste management practices currently implemented at a commercial establishment.
8. Sustainable Design Element Creation: Design a sustainable design element to be integrated into either an existing building or a proposed project.
9. Event Waste Minimization Plan: Develop a waste minimization plan specifically tailored for a particular event or planned activity.
10. Activity Waste Minimization Plan: Develop a waste minimization plan for a generic specific activity not related to a construction site or commercial establishment.

Essential Readings

UNIT I:

This unit focuses on analysing the urban environment, understanding site constraints, and integrating design solutions that respond to the wider community and infrastructure.

- DeKay, M., & Brown, G. Z. (2014). *Sun, wind, and light: Architectural design strategies* (3rd ed.). Wiley.
- Gehl, J. (2011). *Life between buildings: Using public space*. Island Press.
- Lynch, K., & Hack, G. (1984). *Site planning* (3rd ed.). MIT Press.
- Waldheim, C. (2016). *Landscape as urbanism: A general theory*. Princeton University Press.

UNIT II:

This unit focuses on the technical and regulatory aspects of spatial design, covering the development of detailed plans for residential and commercial spaces.

- Buxton, P. (Ed.). (2021). *Metric handbook: Planning and design data* (7th ed.). Routledge.
- Bureau of Indian Standards. (2016). *National building code of India 2016* (Part 3 & 4).
- Central Public Works Department. (2016). *Harmonised guidelines and space standards on barrier free built environment for persons with disability and elderly persons*. Ministry of Urban Development, Government of India.
- Delhi Development Authority. (2021). *Master plan for Delhi - 2041*.
- Ministry of Urban Development. (2014). *Urban and regional development plans formulation and implementation (URDPFI) guidelines* (Vol. 1). Government of India.
- Uzodimma, C., & Nwanegbo, G. T. (2023). Space efficiency and circulation: Parameters for a functional convention centre in international markets. *International Journal of Innovative Environmental Studies Research*, *11*(3), 23–27.

UNIT III:

This unit teaches the essential skills for managing the financial and logistical aspects of a design or construction project, ensuring its successful implementation.

- Duggal, S. K. (2017). *Building materials* (5th ed.). New Age International.
- Gupta, M. K. (2024). *Practical handbook on building construction* (Reprint 2025). Khanna Publishers.
- *Note: In APA 7, use the actual publication year (2024) even if the marketing/reprint refers to 2025.*

- Lewis, H. (2020). *Bids, tenders & proposals: Winning business through best practice* (6th ed.). Kogan Page.
- Rowlinson, S. (Ed.). (2019). *The Routledge handbook of construction project procurement and delivery*. Routledge.
- Royal Institute of British Architects. (2020). *RIBA plan of work 2020 overview*. RIBA Publishing. https://www.architecture.com/knowledge-and-resources/resources-landing-page/riba-plan-of-work

UNIT IV:

This unit provides an in-depth look at the principles, strategies, and design applications for managing waste effectively in urban environments.

- Anagnostopoulos, C., Zaslavsky, A., & Medvedev, A. (2017). Waste management in the smart city: Current practices and future directions. *Smart Cities*, *1*(1), 1–15. https://doi.org/10.3390/smartcities1010001.
- Connett, P. (2013). *The zero waste solution: Untrashing the planet one community at a time*. Chelsea Green Publishing.
- Ghosn, R., & Jazairy, E. H. (2015). *Geographies of trash*. Actar.
- Kumar, S. (Ed.). (2016). *Municipal solid waste management in developing countries*. CRC Press.
- Ministry of Environment, Forest and Climate Change. (2016). *Solid waste management rules, 2016*. Government of India.
- Webster, K. (2017). *The circular economy: A wealth of flows* (2nd ed.). Ellen MacArthur Foundation Publishing.

Suggested Readings

- Meredith, J. R., & Shafer, S. M. (2020). *Project management in practice* (7th ed.). Wiley.

- Mislick, G. K., & Nussbaum, D. A. (2015). *Cost estimation: Methods and tools*. John Wiley & Sons.
- DeChiara, J., Panero, J. & Zelnik, M. (2011). Time Saver Standards for Building types, second edition. McGraw-Hill Education

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

SKILL BASED COURSES

SEMESTER I

SKILL BASED COURSE

CAD FOR SPACE PLANNING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
CAD for Space Planning	2	0	0	2	As per admission norm	Nil

Learning Objectives

- Explain the role of software in design.
- Introduce fundamental space design principles.
- Teach the basics of 2D and 3D drawing software.
- Develop skills in creating and presenting 2D and 3D plans.
- Familiarize students with basic rendering techniques to enhance the drawings.
- Introduce students to use of AI in creating plans

Learning Outcomes

The students would be able to:

- Confidently use CAD for interior design, qualifying them for positions with interior designers, architects, and real estate companies.
- Possess a foundational understanding that prepares them for further study in advanced space design and 3D modeling software.

PRACTICAL
(Credits 2; Hours 60)

1. **Introduction to Computer Aided Design 2D Software**
   - Introduction to two-dimensional software - AutoCAD.
   - Setting up AutoCAD
   - Introduction to AutoCAD (basic tools and bedroom floor plan designing)
   - Basics of AutoCAD (elevation design/single line drawings and standard dimensions)
   - Using simple commands to create simple geometrical pattern
   - Drawing two dimensional patterns with different methods

2. Computer Aided Design 3D Software

- Setting up Sketch up/ 3d software and its functions
- Introduction to modelling and annotation tools
- ntroduction to drawing and editing tools
- Image to Sketch up 3D modelling
- AutoCAD to Sketch up 3D modelling
- Understanding plug-ins, groups and components 3D warehouse

3. Preparation of Plans

- Designing of Staircase, False ceiling, Wall-panel
- Bedroom designing
- Camera setting
- Rendering

4. Use of AI in interior design

- Introduction to AI
- Difference between AR and VR
- Use of AI for designing interiors - some common software

Essential Readings

- Cline, L. (2023). *Sketchup for interior design: 3D visualizing, designing, and space planning* (2nd ed.). John Wiley & Sons.
- De Chiara, J. (2017). *Time-saver standards for interior design and space planning* (2nd ed.). McGraw-Hill Education.
- Tal, D. (2013). *Rendering in SketchUp: From modeling to presentation for architecture, landscape architecture, and interior design*. John Wiley & Sons.
- Ramadhanty, D. M., & Handayani, T. (2020). *The effect of computer-based 3D visualization I*. IOP.
- Shoukry, Y., & Pandey, J. (2020). *Practical Autodesk AutoCAD 2021 and AutoCAD LT 2021: A no-nonsense, beginner's guide to drafting and 3D modeling with Autodesk AutoCAD*. Packt Publishing.

Suggested Readings

- Abbott, D. (2007). *AutoCAD secrets every user should know*. Wiley Publishing, Inc.
- Grabowski, R. (2019). *AutoCAD for dummies*. John Wiley & Sons.
- Fu, F. (2018). In *Design and analysis of tall and complex structures*.Butterworth- Heinemann.
- Gindis, E. (2012). *Up and running with AutoCAD 2012* (2nd ed.). Pearson.
- Adobe Creative Team. (2002). *Adobe Photoshop 7.0 classroom in a book*. Adobe Press.
- Benton, B. C., & Omura, G. (2020). *Mastering AutoCAD 2021 and*

AutoCAD LT 2021. John Wiley & Sons.

- Kirkpatrick, B., Kirkpatrick, J., & Assadipour, H. (2021). *AutoCAD for interior design and space planning.* Pearson.

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

SKILL BASED COURSE

ICTs FOR SUSTAINABLE DEVELOPMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
ICTs for Sustainable Development	2	0	0	2	As per admission norms	Nil

Learning Objectives

- To appreciate the conceptual framework, scope, and significance of ICTs.
- To understand the potential of both information and communication technologies for sustainable development
- To critically analyse the existing business models (public, private sector, PPP, civil society) and other applications in sustainable development with respect to technology, infrastructure, capacity building, human resources etc.
- To inculcate skills in using ICTs for sustainable development

Learning Outcomes

The students would be able to:

- Develop an understanding of the concepts related to ICTs for sustainable development.
- Critically analyse how ICTs can be best applied for sustainability challenges.

PRACTICAL

(Credits 2; Hours 60)

1. Introduction to ICTs for Sustainable Development: Case studies/visits to the communities to understand different types and roles of ICTs in Sustainable Development.
2. Information and Communication Technologies: Working on software, the

physical infrastructure, satellite, wireless solutions, telecommunication technologies, mobiles, fixed line, internet and world-wide web, community radio, technology-user interface, design of relevant ICT products and services.

3. Building Knowledge Societies: Identification of stakeholders and target communities; information needs, Traditional vs. contemporary knowledge systems, information processing and retrieval; means of communication in different areas through live projects.

4. Theory of Change. Draft a Theory of Change for a sanitation campaign using backward mapping. Compare ToC vs LogFrame using a real-world example. Create a visual ToC map and justify your causal links.
5. ICT in Education: Creating e- learning module using digital educational tools aimed for sustainable development.
6. Digital Inclusion and Smart Governance: Analyse e-governance platforms that support sustainable development (e.g., digital services for rural/ urban areas)
7. ICT for Development in India: Prepare a portfolio on policy and institutional framework in India, e-governance, ICT Models, and experiences of ICT practitioners.
8. ICT4D Implementation: Developing an ICT4D Project, Critical Success factors for technology diffusion and use, Constraints in adoption, the role of national policies, institutional framework, multi-stakeholder partnerships, role of private sector.

9. ICT in Monitoring and Evaluation. Use KoboToolbox or ODK to design and deploy a M&E survey. Compare various ICT tools (e.g., DHIS2, Survey CTO) for data collection. Record a video presentation or demo of how a digital tool enhances M&E.
10. Green ICT Practices: Use of Energy-Efficient ICT for Optimisation.

Essential Readings

- **Dhal, S., & Singh, N. (2025).** *E-Governance in India: Heralding a new era of inclusive governance*. Taylor & Francis.
- Heeks, R. (ed.). *Information and communication technology for*

development (ICT4D).

- Joshi, A. (2020). Knowledge Management for Sustainable Development: Tools and Techniques. *Sage Publications.*
- **Kar, A. K., Sinha, S., & Gupta, M. P. (2018).** *Digital India: Reflections and practice*. London/New York: Springer.
- Majumdar, K., Kirtti Ranjan, P., & Bhat, S. A. (Eds.). (2018). *ICT initiation for development in India: Perspectives and challenges*. Indian Books & Periodicals
- **Muttoo, S. K., Gupta, R., & Pal, S. K. (2023).** *E-Governance in India: The progress status*. Singapore: Springer / World Scientific.
- **Seth, N. (2025).** *Human edge in the AI age*. Penguin Random House India.
- **Seth, N. (2024).** *Mastering the data paradox*. Penguin Random House India.

Suggested Readings

- Mishra, R. (Ed.). (2023). *Compendium of e-Governance initiatives in India.* NITI Aayog / State Governments.
- Pannu, P., & Tomar, Y. A. (2010). *ICT4D: Information communication technology for development*. I. K. International Pvt Ltd.
- Preskill, S., & Brookfield, S. D. (2020). Learning as a Way of Leading: Lessons from the Field. *Jossey-Bass.*
- Thistlethwaite, J., & Dichter, T. (2021). Monitoring and Evaluation for Capacity Development: A Practical Guide. *Earthscan.*
- United Nations Department of Economic and Social Affairs (UNDESA). (2021). Thematic Report on Capacity Building for the 2030 Agenda for Sustainable Development.
- Williams, T., & Goodwin, T. (2015). Capacity Development for Organizational Learning. *Routledge.*

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

SKILL BASED COURSES

SEMESTER II

SKILL BASED COURSE

EVENT DESIGN AND STRATEGIES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Event Design and Strategies	**2**	**0**	**0**	**2**	**As per admission norm**	**Nil**

Learning Objectives

- To understand the event design and management:
- To design the event layout and understand logistics
- To develop competencies in event marketing and promotion
- To understand techniques and strategies for successful event planning

Learning Outcomes

The students would be able to:

- Understand the concept and planning of event management.
- Design the layout and logistics of the event
- Manage event financials and costing
- Create and implement event marketing strategies
- Evaluate the success of an event

PRACTICAL
(Credits 2; Hours 60)

1. Event Analysis & Strategic Planning:
   Analyze events, assess KPIs, and apply design thinking to create event concepts.
   - Understanding event types & contexts: Identify corporate, cultural, social, and entertainment events through case studies
   - SWOT analysis of the event: Evaluate event strengths, weaknesses,

opportunities, and threats

- Key Performance Indicators (KPIs) & Success Metrics: Analyze real-world event data to measure engagement, attendance, and ROI
- Event Conceptualization & Theme Development: Apply design thinking principles to create an event blueprint.

2. Event Design, Execution, and Evaluation
   Plan event logistics, budgeting, and marketing while ensuring sustainability and effective execution.
   - Logistics and space planning: Venue selection and design, seating, estimated audience, catering, team delegations
   - Budgeting and financial planning: Financial control plan including budgeting and cost estimations
   - Marketing & Sponsorship Strategy: Design branding materials (posters, flyers, digital content) and develop an advertising strategy (social media, email, etc.), procuring sponsorship for events
   - Sustainability in Events: Implement eco-friendly practices, minimizing waste and optimizing resources.
   - Manage the logistics of executing the event: coordinating vendors, prepare event timelines, handling PR/media, managing celebrities or resource persons
   - Evaluation: Collect feedback (surveys, interviews), analyze KPIs (attendance, engagement, satisfaction), and refine strategies based on analysis for future events.

Essential Readings

- Getz, D. (2020). *Event management & event tourism* (4th ed.). Cognizant Communication Corporation.
- Goldblatt, J. (2020). *Special events: Creating and sustaining a new world for celebration* (8th ed.). Wiley.
- Berridge, G. (2021). *Events design and experience* (2nd ed.). Routledge.
- Van der Wagen, L., & Carlos, J. (2019). *Event management: For tourism, cultural, business and sporting events* (7th ed.). Pearson Education.
- Allen, J., O'Toole, W., Harris, R., & McDonnell, I. (2018). *Festival and event management* (4th ed.). Wiley.

Suggested Readings

- Bladen, C., Kennell, J., Abson, E., & Wilde, N. (2019). *Events management: An introduction* (3rd ed.). Routledge.
- Pendergast, D., & Wheeler, K. (2019). *The event marketing handbook: Beyond logistics and planning*. McGraw-Hill Education.
- Swarbrooke, J., & Horner, S. (2019). *Business of tourism* (4th ed.). Routledge.

- Tassiopoulos, D. (2020). *Event management: A developmental and managerial approach* (2nd ed.). Juta and Company Ltd.
- Felsenstein, D., & Jayaratne, N. (2020). *The global events industry: Case studies of managing international events*. Springer.

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

SKILL BASED COURSE
PROGRAM MONITORING AND EVALUATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Program Monitoring and Evaluation	**2**	**0**	**0**	**2**	**As per admission norms**	**Nil**

Learning Objectives

- To understand the standards and procedures for results-based monitoring and evaluation of programs.
- To develop proficiency in monitoring and evaluating developmental programs.

Learning Outcomes

The students would be able to:

- Develop a comprehensive monitoring and evaluation plan
- Efficiently utilise data analysis software
- Build program results levels and construct a program using logical frameworks
- Use indicators and targets to measure success
- Monitor and track performance indicators over the life of a program
- Conduct an impact evaluation and evaluate a program against key measures

PRACTICAL

(Credits 2; Hours 60)

1. Fundamentals of Monitoring and Evaluation

- Create a concept map comparing different types of evaluation (formative, summative, developmental).
- Analyze an NGO's project report and identify monitoring vs evaluation elements.
- Simulate an introductory stakeholder meeting to discuss M&E importance.

2. Program Analysis

- Conduct a SWOC analysis of a Sustainable development initiative.
- Map stakeholders and their roles in a given development project.
- Present a comparative analysis of two similar programs based on performance data.

3. Design of Results in Monitoring & Evaluation

- Create a Results Framework for an institutional water management program.
- Develop a Problem Tree and turn it into an Objective Tree.
- Pitch your results-based design to a funding agency.

4. Monitoring & Evaluation Indicators

- Design SMART indicators for a youth employment program.
- Evaluate a program’s indicators for relevance and feasibility.
- Use a case to classify indicators as input, output, outcome, or impact.

5. Logical Framework Approach

- Construct a Logical Framework Matrix (LogFrame) for a women’s empowerment program.
- Identify assumptions and risks in a given LogFrame case.
- Peer review and revise a flawed LogFrame draft.

6. Monitoring & Evaluation Systems

- Design a basic M&E system for an education initiative (include tools, roles, data flow).
- Critically review an existing system and suggest improvements.
- An internal audit to check if the system is functioning.

7. Monitoring & Evaluation Planning

- Draft an M&E plan for a disaster relief project.
- Create a Gantt chart outlining M&E activities and responsibilities.
- Manage M&E for a multi-stakeholder program and adjust the plan mid-way based on changes.

8. Program Performance Evaluation

- Conduct a mock mid-term evaluation of a clean water project.
- Develop KPIs and benchmark them using available data.
- Present findings in a dashboard-style format with visualizations.

9. Monitoring & Evaluation Data Management

- Use Excel/SPSS/Google Sheets to input, clean, and analyze M&E data.
- Simulate a data quality assessment (DQA) for a program.
- Create a coding system for qualitative M&E interviews.

10. Monitoring & Evaluation Results Use and Dissemination

- Draft a policy brief using mock M&E findings.
- Create a results dashboard using Canva/Tableau/Excel.
- Simulate a dissemination meeting with stakeholders.

11. Program Impact Assessment

- Design an impact assessment plan using a control and treatment group.
- Analyze a dataset to determine impact using a quasi-experimental design.
- Present a poster summarising your findings and limitations.

Essential Readings

- Bajpai, N. (2020). Evaluation of public policy and development programs. Sage Publications India.
- Basu, P. (2019). Results-based management in development programmes. Sage Publications India.
- Behera, B., & Mishra, S. (2019). Social impact assessment: Methods and practice. Sage Publications India.
- Choudhury, D., & Ahmed, N. (2020). Project planning and management. Oxford University Press India.
- Desai, V. (2018). Development project management. Himalaya Publishing House.
- Kothari, C. R., & Garg, G. (2019). Research methodology: Methods and techniques (4th ed.). New Age International Publishers.
- Kumar, S. (2021). Monitoring and evaluation: Concepts and practice. Sage Publications India.
- Melkote, S. R., & Steeves, H. L. (2015). Communication for development in the Third World: Theory and practice. Sage Publications India.
- Sadagopan, S. (2020). Management information systems. PHI Learning.
- Sapru, R. K. (2021). Public policy: Formulation, implementation and evaluation. Sterling Publishers.

Suggested Readings

- Gertler, P. J., Martinez, S., Premand, P., Rawlings, L. B., & Vermeersch, C. M. *under budget, time, data, and political constraints* (3rd ed.). SAGE Publications.
- Chen, H. (2015). *Practical program evaluation*. (Vols. 1-0). SAGE Publications, Inc, https://doi.org/10.4135/9781071909850
- Hatry, H. P. (2020). *Performance measurement: Getting results* (2nd ed.). The Urban Institute Press.
- International Labour Organisation.. *Basic Principle of Monitoring and Evaluation.* https://www.ilo.org/media/436106/download
- Kusek, J. Z., & Rist, R. C. (2004). Ten steps to a results-based

monitoring and evaluation system: A handbook for development practitioners. The World Bank. https://doi.org/10.1596/0-8213-5823-5

- OECD. (2019). *Better criteria for better evaluation: Revised evaluation criteria definitions and principles for use.* Organisation for Economic Co-operation and Development (OECD). https://www.oecd.org/dac/evaluation/revised-evaluation- criteria-dec-2019.pdf
- Patton, M. Q. (2021). Utilization-focused evaluation (5th ed.). SAGE Publications Scriven, M. (2016). *The logic of evaluation.* CREA Publishing.
- Rogers, P. J. (2014). Theory of change: Methodological briefs – Impact evaluation No. 2. UNICEF Office of Research – Innocenti
- World Bank. (2017). Impact evaluation in practice (2nd ed.). The World Bank.

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

Annexure-12

UNIVERSITY OF DELHI

Department of Home Science

Faculty of Science

I Year MSc. Resource Management and Design Application Department of Home Science University of Delhi

Course Credit Structure -NEP 2026

The department of home science offers master's programme in Resource Management & Design Application. This master's programme strives at empowerment through knowledge and skills towards management of personal, family, community and shared resources for creation of sensitive, aesthetic and sustainable environment. The programme strives to build a cadre of professionals in the area of sustainable management of resources and new product development. The courses are pitched at providing a strong theoretical base along with skill enhancement through hands-on training. The curriculum provides experiential training to students for professional and career readiness which enables students to participate in real life projects and develop the right skill set needed in a competitive market scenario.

Programme Specific Objectives:

- To build a cadre of professionals in the area of sustainable management of resources and new product development.
- To provide a strong theoretical base along with skill enhancement through hands-on training.
- To provide experiential training to students for professional and career readiness which enables students to participate in real life projects and develop the right skill set needed in a competitive market scenario.
- To train students to work in the areas of research, consultancy, programme, design, management and evaluation in various research and social development organizations

Programme Specific Outcomes:

- Professional and career readiness through participation in real life projects and develop the right skill set needed in a competitive market scenario.
- Enhanced entrepreneurial spirit through sounder management of facilities, marketing, finance and project management.
- Proficiency in various computer aided softwares along with design simulation thus giving a professional edge.
- Expertise in designing space and products using ergonomic, sustainable, economically and socio-culturally viable solutions with focus on life-cycle assessment approach.
- Proficiency in policies, practices and technologies for sustainable use of resources integrated with various dimensions and frameworks of environment management.

Course Credit Scheme M.Sc. Resource Management and Design Application

Programme Structure-1: (PG with only Coursework+ Research)

Semester	Core Courses		Elective Course		Research/ Project		Total Credits
	No. of courses	**Total credits**	No. of courses	**Total credits**	No. of courses	**Total credits**	
I	2	8	2	8	1	6	22
II	2	8	2	8	1	6	22
Total Credits for the course	16		16		12		44

List of PGCF courses of M.Sc. Resource Management and Design Application (Semester I and II of the One-year programme)

List of Courses to be offered to students opting for Structure-1 of M.Sc. in 1st and 2nd Semester of one year course							
Type of Course	**Type**	**Semester**	**Name of the Courses**	**Credits in each course**			
				Lecture	**Tutorial**	**Practical**	**Total**
Semester – I							
Discipline Specific Core Course	DSC 1	I	Inclusive Design Systems	3	0	1	4
Discipline Specific Core Course	DSC 2	I	Corporate Social Responsibility & Sustainability Reporting	3	0	1	4
Discipline Specific Elective Course	DSE 1	I	From the Pool of DSEs given below[##] i. Statistics & Data Management ii. Sustainable Development: Policies & Practices iii. Advanced Spatial Planning Systems iv. Climate Change, Ecosystem, & Societies: Issues & Concerns v. Design Strategies & Audit vi. Health & Safety in Built Environment vii. Social Design Methods & Research	As per the specific course			4
Discipline Specific Elective Course	DSE 2	I		As per the specific course			4
Discipline Specific Elective Course	DSE 3	I		As per the specific course			4
Dissertation Project/ Entrepreneurship	DP 1	I	Dissertation/Academic project/ Entrepreneurship	0	0	6	6

<table>
<tr><td colspan="8">Semester-II</td></tr>
<tr><td>Discipline Specific Core Course</td><td>DSC 3</td><td>II</td><td>Entrepreneurship and Enterprise Management</td><td>2</td><td>0</td><td>2</td><td>4</td></tr>
<tr><td>Discipline Specific Core Course</td><td>DSC 4</td><td>II</td><td>Financial Planning and Accounting Practices</td><td>3</td><td>0</td><td>1</td><td>4</td></tr>
<tr><td>Discipline Specific Elective Course</td><td>DSE 4</td><td>II</td><td rowspan="3">From the Pool of DSEs given below##

viii. Energy Policy, Systems and Sustainability
ix. Ergonomics & Occupational Safety Management
x. Policies and Technologies for Waste Management
xi. Professional Design Methods & Start-ups
xii. Integrating Sustainable Development in Practice
xiii. Design Processes in Built Spaces</td><td colspan="3">As per the specific course</td><td>4</td></tr>
<tr><td>Discipline Specific Elective Course</td><td>DSE 5</td><td>II</td><td colspan="3">As per the specific course</td><td>4</td></tr>
<tr><td>Discipline Specific Elective Course</td><td>DSE 6</td><td>II</td><td colspan="3">As per the specific course</td><td>4</td></tr>
<tr><td rowspan="7">Pool of Discipline Specific Elective Courses to be offered in the 1st semester#</td><td colspan="7">i. Statistics & Data Management</td></tr>
<tr><td colspan="7">ii. Sustainable Development: Policies & Practices</td></tr>
<tr><td colspan="7">iii. Advanced Spatial Planning Systems</td></tr>
<tr><td colspan="7">iv. Climate Change, Ecosystem, & Societies: Issues & Concerns</td></tr>
<tr><td colspan="7">v. Design Strategies & Audit</td></tr>
<tr><td colspan="7">vi. Health & Safety in Built Environment</td></tr>
<tr><td colspan="7">vii. Social Design Methods & Research</td></tr>
<tr><td rowspan="6">Pool of Discipline Specific Elective Courses to be offered in the 2nd Semester##</td><td colspan="7">viii. Energy Policy, Systems and Sustainability</td></tr>
<tr><td colspan="7">ix. Ergonomics & Occupational Safety Management</td></tr>
<tr><td colspan="7">x. Policies and Technologies for Waste Management</td></tr>
<tr><td colspan="7">xi. Professional Design Methods & Start-ups</td></tr>
<tr><td colspan="7">xii. Integrating Sustainable Development in Practice</td></tr>
<tr><td colspan="7">xiii. Design Processes in Built Spaces</td></tr>
</table>

SEMESTER I

DISCIPLINE SPECIFIC CORE COURSE

INCLUSIVE DESIGN SYSTEMS

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Inclusive Design Systems	**4**	**3**	**0**	**1**	**As per admission norms**	**Nil**

Learning Objectives

- To develop an understanding of the core concepts, principles, and legal frameworks of inclusive and universal design.
- To build the ability to assess interior and exterior environments for accessibility using structured tools and user-centered methods.
- To cultivate skills in identifying user needs especially for older adults and individuals with disabilities and translating them into inclusive design opportunities.
- To enable students to review, analyze, and propose context-appropriate inclusive design interventions supported by case studies, standards, and practical findings.

Learning Outcomes

After completing the course, students will be able to :

- Understand inclusive design concepts, principles, and accessibility standards.
- Identify user needs and barriers faced by diverse populations, especially persons with disabilities and the elderly.
- Develop the ability to assess spaces and products for accessibility and propose practical improvements.
- Demonstrate sensitivity, awareness, and critical thinking in applying inclusive design approaches to real-world contexts.

THEORY
(Credits 3; Hours 45)

UNIT I: Foundations of Inclusive Design **11 Hours**

This unit introduces students to the fundamental concepts, scope, and relevance of inclusive and accessible design, focusing on creating awareness of diverse human needs and abilities.

- Concept, scope, and importance of inclusive design.
- Understanding human variability and spatial needs of Persons with disabilities (PwDs).
- Differences and overlaps between Inclusive Design, Universal Design, and Conventional Design.
- Universal Design philosophy and its integration in built environments and products.

UNIT II: Dimensions, Principles, and User Diversity **12 Hours**

This unit deepens understanding of user diversity, principles of inclusive design, and the role of assistive technologies in enhancing usability for all population groups.

- Dimensions of Inclusive Design: physical, sensory, cognitive, and social.
- Principles of inclusive design and their practical applications.
- Frameworks for understanding user diversity and design personas.
- Assistive devices and emerging technologies for accessibility (mobility aids, communication devices, smart assistive tech).
- Inclusive design evaluation methods and user testing.

UNIT III: Accessibility in Interior and Exterior Spaces **11 Hours**

This unit focuses on spatial accessibility, inclusive architecture, and environmental design strategies for creating barrier-free indoor and outdoor environments.

- Concepts and methodologies for inclusive spatial design.
- Accessibility requirements for interior spaces (homes, public buildings, workspaces).
- Accessibility requirements for exterior spaces (streetscapes, parks, transport, public amenities).

UNIT IV: Legal, Policy and Ethical Landscape **11 Hours**

This unit examines regulatory frameworks and responsible design practice.

- Legal norms and standards: RPwD Act, BIS Codes, ISO standards.
- Government policies and initiatives promoting accessibility and universal design.
- Ethical considerations in designing for disability, aging, and vulnerable

populations.

- Principles of responsible, participatory, and rights-based design approaches.

PRACTICAL
(Credits 1; Hours 30)

1. Conduct accessibility audits of selected indoor and outdoor spaces using structured checklists to identify physical, sensory, and navigational barriers affecting diverse users.
2. Map user experiences and activity flows for older adults and individuals with disabilities to identify unmet needs, challenges, and opportunities for inclusive design.
3. Analyze national and international aspects of inclusive architecture or built environments through secondary sources, highlighting effective design strategies and lessons for local application.
4. Apply tools and techniques for accessibility assessment, including barrier mapping, circulation analysis, and spatial observation, to evaluate real environments.
5. Review existing products, interior elements, or public-use items to identify inclusivity gaps and propose realistic improvements aligned with universal design principles.
6. Prepare a practical, inclusive design proposal based on user needs, audit findings, and legal accessibility guidelines

Essential Readings

UNIT I:

This unit introduces students to the fundamental concepts, scope, and relevance of inclusive and accessible design, focusing on creating awareness of diverse human needs and abilities.

- Nussbaumer, L. L. (2011). *Inclusive design: A universal need*. Bloomsbury Academic. ISBN 978-1563679216
- Steinfeld, E., & Maisel, J. L. (2012). *Universal Design: Creating Inclusive Environments*. Wiley.

UNIT II:

This unit deepens understanding of user diversity, principles of inclusive design, and the role of assistive technologies in enhancing usability for all population

groups.

- Maisel, J. L., Steinfeld, E., Basnak, M., Smith, K., & Tauke, M. B. (2018). *Inclusive design: Implementation and evaluation*. Routledge.
- Gilbert, R. M. (2025). *Inclusive design for a digital world: Designing with accessibility in mind* (2nd ed.). Apress.

UNIT III:

This unit focuses on spatial accessibility, inclusive architecture, and environmental design strategies for creating barrier-free indoor and outdoor environments.

- Goodman-Deane, J., Dong, H., Heylighen, A., Lazar, J., & Clarkson, J. (Eds.). (2023). *Design for sustainable inclusion: CWUAAT 2023*. Springer.
- Preiser, W., & Smith, K. (2011). *Universal design handbook* (2nd ed.). McGraw-Hill.
- Gupta, A., Yadav, M., & Nayak, B. K. (2025). A Systematic Literature Review on Inclusive Public Open Spaces: Accessibility Standards and Universal Design Principles. Urban Science, 9(6), 181. https://doi.org/10.3390/urbansci9060181

UNIT IV:

This unit examines regulatory frameworks and responsible design practice.

- Nussbaumer, L. L. (2011). *Inclusive design: A universal need*. Bloomsbury Academic. ISBN 978-1563679216

Suggested Readings

- Langdon, P., Lazar, J., Heylighen, A., & Dong, H. (Eds.). (2020). Designing for inclusion: Inclusive design—Looking towards the future. Springer.
- Heylighen, A. (2020). Designing for disabilities: Inclusive architecture reconsidered. Routledge.
- Clarkson, J., Coleman, R., Keates, S., & Lebbon, C. (2003). Inclusive design: Design for the whole population. Springer.
- Ostroff, E. (2011). Universal design: Principles and models. Fair Housing Center.

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

DISCIPLINE SPECIFIC CORE COURSE

CORPORATE SOCIAL RESPONSIBILITY AND SUSTAINABILITY REPORTING

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Corporate Social Responsibility and Sustainability Reporting	**4**	**3**	**0**	**1**	**As per admission norms**	**Nil**

Learning Objectives

- To understand the meaning, scope and importance of Corporate Social Responsibility (CSR)
- To learn about the policies, practices industry norms, potential business benefits, stakeholder influence with regard to CSR
- To learn about the planning, processes, implementation and monitoring of CSR activities
- To understand the need and benefits of sustainability reporting for businesses
- To learn about the various sustainability reporting guidelines

Learning Outcomes

After completing the course, students will be able to:

- Develop an understanding of the scope, approaches, policy and procedure of Corporate Social Responsibility (CSR)
- Understand planning, processes, implementation and monitoring of CSR projects through case studies
- Understand and evaluate CSR reports as per standard reporting guidelines
- Know about sustainability standards, indices and reporting guidelines

THEORY
(Credits 3; Hours 45)

UNIT I: Basics of Corporate Social Responsibility (CSR) 8 Hours

This unit aims at orienting the students towards the concept and importance of Corporate Social Responsibility (CSR), triple bottom line, and ESG

- Meaning, definition and importance of CSR
- History and evolution of CSR
- Sustainable businesses, triple bottom line, ESG (Environmental, Social and Governance)
- Practices and Initiatives for CSR, legal and economic perspective, theories, industry norms
- Global and Indian Scenario with Case studies

UNIT II: Corporate Social Responsibility: Policies and Practices 12 Hours

This unit aims to create an understanding on Indian legislations for CSR, UN guiding principles and SDGs, and other practices related to CSR.

- Indian legislations for CSR; Companies Act, 2013 and Amendments
- Global principles and guidelines for CSR (GRI framework, UN Global compact, CDP, OECD guidelines for multinational corporations, NVGs etc.)
- SDGs and CSR
- Globalization and CSR

UNIT III: CSR Activities: Planning and Strategizing 13 Hours

This Unit aims to create an understanding on planning and strategizing CSR activities.

- CSR planning and strategizing
- CSR and SMEs
- CSR Audit; issues related to CSR Audit
- Brand building through CSR communications

UNIT IV: Sustainability Reporting: Standards and Indices 12 Hours

This Unit aims to create an understanding towards the need and benefits of sustainability reporting and different sustainability reporting guidelines.

- Financial and non-financial disclosures, need and benefits of sustainability reporting
- Tools for stakeholder communication
- Sustainability Reporting Guidelines
- Structure of a sustainability report
- Sustainability reporting as per different guidelines

PRACTICAL
(Credits 1; Hours 30)

- CSR initiatives taken by corporates - Analysis through primary research

- Critical analysis of implementation strategies of CSR initiatives with reference to Foundation/Trust/Section 8 Companies etc.
- Planning innovative CSR Projects/Programmes in context of SDGs
- CSR communications: preparation of presentations, websites, print media, social media etc.
- Evaluation and preparation of CSR/sustainability/ESG reports with reference to different reporting guidelines like GRI, CDP, NVG etc.

Essential Readings:

UNIT I:

- Gupta, S. (2025). Corporate social responsibility and sustainable development goals for a developed India @2047. *Journal of Sustainable Business, 10,* 15. https://doi.org/10.1186/s40991-025-00118-1
- Debnath, P., & Chellasamy, P. (2022). An empirical study on issues and challenges of corporate social responsibility activities in India. *Asian Journal of Management, 13*(4), 345–350. https://doi.org/10.52711/2321-5763.2022.00056
- Institute of Directors India. (2020). *A Handbook on Corporate Social Responsibility, A Condensed Guide for Corporate Directors & Senior Executive*. Institute of Directors, New Delhi, India.

UNIT II:

- Mital, M., & Gupta, P. (Eds.). (2025). *Environmental Studies: Resources and Sustainability - A Textbook and Practical Manual.* Elite Publishing.
- Wirba, A. V. (2023). Corporate social responsibility (CSR): The role of government in promoting CSR. *Journal of the Knowledge Economy*, 1–27. https://doi.org/10.1007/s13132-023-01185-0
- Garg, K. (2021). *Corporate Social Responsibility (3rd edition)*. Bharat Law House Pvt. Ltd.

UNIT III:

- Lumde, N. (2024). *ESG and CSR: Strategies for Career Success and Corporate Responsibility*. Notion Press.
- Chandler, D. (2020). *Strategic Corporate Social Responsibility: Sustainable Value Creation.* SAGE Publications.

UNIT IV:

- Parikh, K. M. (2025). *ESG & BRSR Reporting*. Taxmann.
- Joseph, P. S. (2025). *A Guide to Sustainability Reporting in the Age of Greenwashing*. Self published.

Suggested Readings:

- Lumde, N. (2018). *Corporate Social Responsibility in India: A Practitioner's Perspective*. Notion Press. ISBN-10: 1644295431, ISBN-13: 978-1644295434.

- Stangis, D., & Smith, K. V. (2017). *The Executive's Guide to 21st Century Corporate Citizenship: How your Company Can Win the Battle for Reputation and Impact*. Emerald Publishing Ltd.
- Mitra, N., & Schmidpeter, R. (2016). *Corporate Social Responsibility in India: Cases and Development after the Legal Mandate.* Springer International Publishing, Switzerland.
- Reddy, V. R., & Dheeraja, C. (2016). *The Six Essential Steps in Implementing CSR*. Studera Press, New Delhi.
- Ahluwalia, J. S. (2015). *Environmental Governance for Sustainability in Ahluwalia*, J. S. (Editor), Environmental Governance: Transition to a Green Economy, New Delhi, IOD Publishing
- Nielsen. (2015). *The Nielsen Global Survey of Corporate Social Responsibility and Sustainability*. Oxford, Nielsen.
- Chakrabarty, B. (2015). *CSR in India*. Routledge.
- Epstein, M. J., & Buhovac, A. R. (2014). *Making Sustainability Work: Best Practices in Managing and Measuring Corporate Social, Environmental, and Economic Impacts*. Greenleaf Publishing Ltd.
- Korngold, A. (2014). *A Better World, Inc.: How Companies Profit by Solving Global Problems…Where Governments Cannot.* Palgrave Macmillan.
- Agarwal, S. (2013). *CSR in India*. SAGE Publications.
- Baxi, C. V. and Roy, R. S. (2011). *Corporate Social Responsibility,* Vikas Publishing House, New Delhi.
- Chatterji, M. (2011). *Corporate Social Responsibility*. Oxford University Press India; Reprint edition. ISBN-10: ‏13-ISBN ,0198069839 ‏978-0198069836.

Journal articles (highly cited and relevant)

- Chatterjee, S., & Mirza, D. (2023). Sustainability reporting in India: A critical assessment of Business Responsibility Reports of the top 100 companies. *Sustainability Accounting, Management and Policy Journal*, *14*(7), 1541–1572.
- Thomas, R., & Bhaumik, A. (2023). ESG practices and firm performance in Indian listed companies. *Journal of Risk and Financial Management*, *16*(9), 405.
- Garg, P. (2024). Corporate responsibility (CSR), ESG goals and sustainable development in India—An analysis. *Corporate Social Responsibility in India* (pp. 115-132). Springer, Singapore.
- Mishra, M. K. (2020). Sustainability reporting practices of Indian corporate sector: A comparative analysis. *Journal of Business and Financial Affairs*, *9*(3), 375.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
STATISTICS AND DATA MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Statistics and Data Management	4	3	0	1	As per admission norms	Nil

Learning Objectives

- To develop understanding of fundamental and advanced statistical concepts used in research and data analysis.
- To enable students to apply descriptive and inferential statistics for real-world decision- making.
- To strengthen ability to formulate hypotheses, select appropriate statistical tests, and interpret outputs.
- To prepare students for quantitative research, industry analytics, and academic data projects.
- To train students in using Excel and SPSS for data handling, visualization, and interpretation.

Learning Outcomes

The students would be able to:

- Explain key concepts in descriptive and inferential statistics.
- Organize, clean, and summarize datasets using appropriate statistical tools.
- Apply probability distributions, correlation, regression, and hypothesis testing.
- Use Excel and SPSS for data visualization, statistical testing, and reporting.
- Interpret statistical outputs and draw valid conclusions for research decisions.
- Design and execute quantitative data analysis workflows independently.

THEORY

(Credits 3; Hours 45)

UNIT I: Introduction and descriptive Statistics 12 Hours

This unit will introduces the foundations of statistics and techniques for summarizing and describing data.

- Definition, scope, and applications of statistics
- Types of data: qualitative and quantitative
- Scales of measurement
- Classification & tabulation of data
- Graphical and visual representations
- Measures of central tendency: mean, median, mode
- Measures of dispersion: range, variance, standard deviation, coefficient of variation
- Skewness and kurtosis: meaning and interpretation

UNIT II: Probability and Probability Distributions 10 Hours

This unit explores probability concepts and major statistical distributions.

- Basic probability concepts: Addition & multiplication theorems
- Random variables: discrete and continuous
- Binomial and Normal distributions
- Sampling theory & sampling distributions
- Central Limit Theorem

UNIT III: Correlation and regression 8 Hours

This unit focuses on analysing relationships between variables.

- Correlation: Pearson and Spearman correlation
- Simple linear regression: model, estimation, interpretation
- Multiple linear regression: assumptions, multicollinearity, model building

UNIT IV: Hypothesis Testing and Non-Parametric Methods 15 Hours

This unit introduces hypothesis testing frameworks and non-parametric alternatives for non-normal data.

- Concept of hypothesis: null & alternative
- Types of errors, significance levels, p-value
- Parametric tests:
    - z-test
    - t-test (one sample, independent, paired)
    - Chi-square test
- Non-parametric tests:
    - Mann–Whitney U test

    - Wilcoxon signed-rank test
    - Kruskal–Wallis test
- Interpretation and reporting of statistical results
- Research Conclusion and recommendation

PRACTICAL

(Credits 1; 30 hours)

1. Data Entry, Coding & Cleaning: Importing data, handling missing values, variable labels, Excel formulas.
2. Descriptive Statistics & Visualization: Mean, Standard Deviation, frequency tables, histograms, boxplots (Excel + SPSS).
3. Cross-Tabulation & Chi-Square Test: PivotTables in Excel; Crosstabs in SPSS.
4. Correlation Analysis: Pearson & Spearman correlations; scatterplots.
5. Simple Linear Regression: Trendline in Excel; Regression output in SPSS.
6. Multiple Regression: Model summary, coefficients, interpretation using SPSS.
7. t-Tests: Independent, paired, and one-sample t-tests in SPSS.
8. ANOVA (One-way & Two-way): Running ANOVA and post-hoc analysis.
9. Non-Parametric Tests: Mann-Whitney, Wilcoxon, Kruskal–Wallis in SPSS.
10. Report Generation & Interpretation
11. Preparing APA-style tables, graphs, and interpretations in Excel/SPSS.

Essential Readings:

UNIT I

This unit describes the foundations of statistics and techniques for summarizing and describing data.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.). Pearson Prentice Hall.
- Bernard, H. R. (2000). *Social research methods: Qualitative and quantitative approaches*. Sage.
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.). CreateSpace Independent Publishing Platform.
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*. Wiley.

UNIT II

This unit deals with the probability concepts, rules of probability, discrete and continuous distributions (Binomial, Poisson, Normal).

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*.

UNIT III

This unit focuses on relationship between variables, correlation coefficients, simple and multiple regression, regression assumptions.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Muijs, D. (2004). *Doing quantitative research in education with SPSS*. Sage.

UNIT IV

The unit deals with statistical inference such as t-tests, ANOVA, Chi-square, non-parametric tests (Mann-Whitney, Wilcoxon, Kruskal-Wallis), decision making.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*.
- Muijs, D. (2004). *Doing quantitative research in education with SPSS*.

Suggested Readings

- Field, A. (2025). *Discovering Statistics Using IBM SPSS Statistics* (6th ed.). Sage.
- Kalyanaraman, K., Ramanathan, H. N., & Harikumar, P. N. (2025). *Statistical Methods for Research: A Step-by-Step Approach Using IBM SPSS*. Atlantic Publishers.
- Healey, J. F., & Donoghue, C. (2021). *Statistics: A Tool for Social Research and Data Analysis* (11th ed.).

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

SUSTAINABLE DEVELOPMENT: POLICIES & PRACTICES

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Sustainable Development: Policies & Practices	**4**	**3**	**0**	**1**	**As per admission norms**	**Nil**

Learning Objectives

- To sensitize towards indicators and measures of sustainable development
- To give knowledge of and capacity to analyze policies and practices for sustainable development of different sectors
- To understand management strategies for noise, water, energy etc.
- To understand the components and techniques of EIA

Learning Outcomes

After completing the course, students will be able to :

- Gain insight into the need, indicators and measures of sustainable development along with challenges and responses
- Understand and critically analyze policies and practices regarding various sectors- air, water, agriculture, etc.
- Gain knowledge of water management systems, water quality parameters, rainwater harvesting
- Understand the components & techniques of EIA, legislative aspects, current practices & constraints

THEORY
(Credits 3; Hours 45)

UNIT I: Concept and dimensions of sustainable development 10 Hours

This unit covers throws light on the concept of sustainable development, its objectives and parameters.

- Concept of sustainability, dimensions of sustainability - social, economic and environmental
- Objectives and parameters of sustainable development
- Need and indicators of sustainable development
- Challenges and responses to Sustainable Development
- Evolution, approaches, interpretation of SDGs
- Environmental pollution and sustainability with reference to home, community and society

UNIT II: Water management: Practices, policies and technologies 12 Hours

This unit focuses on policies, practices and technologies for the management of water.

- Need and importance of water management systems, surface and ground water management
- Water pollutants, their sources, effect of water pollution on environment and health
- Water quality parameters, water pollution control strategies
- Waste water management systems: techniques and technologies
- Rainwater harvesting: need and principle

UNIT III: Air and noise management: Practices, policies and technologies 12 Hours

This unit focuses on policies, practices and technologies for the management of air and noise.

- Need and importance of air pollution management
- Air pollution, sources and effects on environment and health
- Ambient air quality standards, Air Quality Index (AQI)
- Controlling air pollution
- Noise pollution and management, standards for noise pollution, policy instruments for noise management

UNIT IV: Environmental Impact Assessment: Approaches & Techniques 11 Hours

This unit throws light on Environmental Impact Assessment (EIA) as an important practice for sustainable development.

- Environmental Impacts – examples, need for assessment, difficulties

- The EIA Approach – Background, Objectives, Components & Techniques
- Environmental impact assessment- importance, significance, steps, procedure to be followed, role of Government and non-governmental organizations
- EIA in India – Legislative aspects, Current practices & Constraints, way forward

PRACTICAL

(Credit 1; Hours: 30)

- Understanding Sustainable Development Goals (SDGs) with reference to India - Analysis through policy implementation, feedback from stakeholders etc.
- Government initiatives on sustainable development - Focus areas may include policy analysis, linkages of the identified policy with other goals (SDGs etc.), implementation challenges, outcomes and recommendations – Critical evaluation through primary research
- Monitoring of air quality, controlling air pollution and noise management – Analysis of the current scenario of the initiatives taken by the government and industry
- Water pollution control techniques and water treatment technologies – Analysis of the current scenario of the initiatives taken by the government and industry
- Study of water harvesting scenario in different states of India, Study of rain water harvesting systems – traditional and contemporary, Calculation of rainwater harvesting potential
- EIA for different sectors – Reviewing and preparing EIA reports

Essential Readings

UNIT I:

- Bhardwaj, A. (2024). *Sustainable Development in India: Future Challenges*. Shandilya Publications.
- Jana, K. (2023). *The Sustainable Development Goals in India: Few Issues & Contexts*. Redshine Publication.
- IPCC. (2023). *AR6 Synthesis Report: Climate Change 2023*. IPCC.
- Patel, B. N., & Nagar, R. (2018). *Sustainable Development and India.* Oxford University Press.

UNIT II:

- Mital, M., & Gupta, P. (Eds.). (2025). *Environmental Studies: Resources and Sustainability - A Textbook and Practical Manual*. Elite Publishing.
- Meena, M. L., Varale, Y., Upadhyay, K. K., & Talukdar, P. (2024). *Sustainable Water Management*. Bhumi Publishing.
- Grigg, N. (2023). *Water Resources Management: Principles, Methods, and Tools*. John Wiley & Sons: New Jersey.

UNIT III:

- Bhati, S. C. (2021). *Textbook of Air Pollution and its Control*. Atlantic.
- Yerramilli, A. (2019). *Air pollution: Prevention and Control Technologies*. BS Publications.

UNIT IV:

- Bhateria, R., Sharma, M., Singh, R., & Kumar, S. (2024). *Environmental Impact Assessment*. Springer.
- Dutta, V., & Ghosh, P. (Editors). (2023). *Sustainability: Science, Policy, and Practice in India: Challenges and Opportunities.* Springer.

Suggested Readings:

- Ristinen, R.A. and Kraushaar, J.J. (2006). *Energy and the Environment.* John Wiley & Sons, Inc., USA.
- Boyle, G. (2004). *Renewable Energy: Power for a Sustainable Future.* Oxford University Press, UK.
- Boyle, G., Everett, B. and Ramage, J. (Editors) (2003). *Energy Systems and Sustainability: Power for a Sustainable Future.* Oxford University Press, UK.
- Lee, N. and C. Kirkpatrick (Eds). (2000). *Integrated Appraisal and Sustainable Development in a Developing World.* Cheltenham, Edward Elgar.

Journal Articles (high citation index)

- Gupta, A., & Dikshit, A. K. (2020). Environmental and health impacts of air pollution: A review. *Frontiers in Public Health*, *8*, 14.
- Gulia, S., Goyal, S. K., Kumar, A., & C. S., P. (2021). Evolution of air pollution management policies and research gap assessment in India. *Science of The Total Environment*, *800*, 149594.
- Garg, N., & Maji, S. (2016). A retrospective view of noise pollution control policy in India: Status, proposed revisions and control measures. *Journal of Cleaner Production*, *133*, 1063–1078.
- Hadden, S. G. (1987). Environmental regulations, air and water pollution, and infant mortality in India. *Population and Environment*, *9*(2), 79–103.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

ADVANCED SPATIAL PLANNING SYSTEMS

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Advanced Spatial Planning systems	4	2	0	2	As per admission norm	Nil

Learning Objectives

- This course focuses on methodological and technical approaches to planning spaces and their application in building interiors.
- The students will gain information and understanding of the social, psychological, and functional contexts that influence efficient movement patterns in contemporary space structuring.

Learning Outcomes

The students would be able to:

- Understand the concept of space design and its application in building interiors.
- Enable exploration of insights for a conducive socio-economic and environmental impact.
- Give technical inputs in professional interior designing of residential and commercial spaces.

THEORY

(Credits 2; Hours 30)

UNIT I: Designing Sustainable Spaces **8 Hours**

This unit focuses on the fundamental principles of advanced spatial planning and their relationship with sustainability and heritage.

- Structuring spaces for different uses

- Social and psychological context of space design
- Design efficiency in terms of the pattern of movement and functionality
- Green building design and audit, Energy efficiency in building construction, Modular system in construction of buildings

UNIT II: Restoration and Repair of Heritage properties 6 Hours

This unit provides an introduction to the critical field of heritage conservation, focusing specifically on the technical and theoretical aspects of restoring historic structures.

- Types of heritage structures
- Role of agencies involved in restoration of heritage properties
- Elements of restoration
- Development of architectural styles and trends in India and around the world (Focus on Indian Palaces/Forts etc);

UNIT III: Space Designing for Interior Services 8 Hours

This unit delves into the essential technical services required within a built space.

- Lighting design for different spaces
- False Ceilings: construction techniques
- Acoustics: Types of acoustic design and materials, sound transmission, reverberation, and propagation
- Air Conditioning: duct design and layout plan
- Fire safety: Types, Evacuation plans
- Types of security services in buildings

UNIT IV: Visual Merchandising and Window Display 8 Hours

This unit introduces the art and science of Visual Merchandising (VM), focusing on its role in retail and customer engagement.

- Defining Visual Merchandising:
- Key Principles of Visual Merchandising:Color Psychology, Space Planning, Signage and Graphics, Lighting, Sensory Appeal.
- The Impact of Visual Merchandising on Customer Behavior
- Exploring and Understanding Company's Visual Design Policy
- Upselling via Window Display
- Understanding the Different Components that Contribute to Creating High Quality Window Displays
- Factors to be Considered When Creating a Professional Window Display

PRACTICAL

(Credits 2; Hours 60)

1. Conduct a survey to analyze and document the evolution of design practices, specifically focusing on how new design solutions are implemented to reflect and meet changing user needs.
2. Undertake site visits to physically examine and study various examples of existing structures and spaces, documenting different types of designs that demonstrate exceptional user-friendliness and accessibility.
3. Produce detailed presentation drawings, including floor plans, for diverse commercial and public interior spaces such as retail offices, hotel public areas, stand-alone restaurants, gymnasiums, health clubs, and sports complexes.
4. Generate comprehensive working drawings covering interior service plans, including Electrical layouts, reflected ceiling plans, wall treatment specifications for temperature control and acoustics, electrical planning details, and other furnishing and perspective drawing specifics.
5. Investigate and evaluate the concept of wash fastness in materials, which refers to a material's resistance to color loss or fading when exposed to washing.
6. Perform case studies and surveys on organizations that successfully foster creativity, innovation, and new venture creation, focusing on emerging technological and industrial trends that disrupt markets and influence business decisions.
7. Identify potential business opportunities based on emerging industry trends and subsequently develop detailed business plans outlining strategies for market entry, operation, and growth.
8. Engage in design exploration by examining different themes influenced by culture, specific occasions, and brand identity, and then create theme-based mood boards to guide the design of promotional displays.
9. Detailed plans for display areas by strategically understanding and implementing effects created by lighting schemes, mannequin grouping, color usage, and establishing effective focal points. This also includes the assessment, evaluation, and budgeting for the display area.
10. Create detailed technical designs for visual displays, using software like AutoCAD 2D and Photoshop for both 2D and 3D display concepts. This includes developing signage

and graphics, designing lighting plans to create specific focal points, and carefully selecting suitable coverings, props, and merchandise.

Essential Readings

UNIT I:

This unit focuses on the fundamental principles of advanced spatial planning and their relationship with sustainability and heritage.

- Alexander, C., Ishikawa, S., & Silverstein, M. (1977). *A pattern language: Towns, buildings, construction*. Oxford University Press.
- Ching, F. D. K. (2014). *Architecture: Form, space, and order* (4th ed.). John Wiley & Sons.
- Neufert, E. (2019). *Architects' data* (5th ed.). Wiley-Blackwell.
- U.S. Green Building Council. (2013). *LEED reference guide for building design and construction* (v4).

UNIT II:

This unit provides an introduction to the critical field of heritage conservation, focusing specifically on the technical and theoretical aspects of restoring historic structures.

- Borden, D., Elzanowski, J., Lawrenz, C., & Miller, T. (2008). *Architecture: A world history*. Abrams.
- Brown, P. (2010). *Indian architecture* (Vols. 1–2). D. B. Taraporevala Sons & Co.
- Indian National Trust for Art and Cultural Heritage. (2004). *Charter for the conservation of unprotected heritage and sites in India*. INTACH.
- Marshall, J. (1923). *Conservation manual: A handbook for the use of archaeological officers and others entrusted with the care of ancient monuments*. Superintendent of Government Printing.
- Sharanappa. (2025). Role of UNESCO and ASI in the heritage conservation of India.

UNIT III:

This unit delves into the essential technical services required within a built space.

- ASHRAE. (2022). *ASHRAE design guide for duct systems*. American Society of Heating, Refrigerating and Air-Conditioning Engineers.
- Bureau of Indian Standards. (2016). *National building code of India 2016* (Vol. 1 & 2).
- Chudley, R., & Greeno, R. (2020). *Building construction handbook* (12th ed.). Routledge.
- Editors of Cool Springs Press. (2017). *Black & Decker: The complete guide to finishing walls & ceilings*. Cool Springs Press.
- Konstantzos, I., Sadeghi, S. A., Kim, M., Xiong, J., & Tzempelikos, A. (2020). The effect of lighting environment on task performance in buildings – A review. *Energy and Buildings, 226,* Article 110394. https://doi.org/10.1016/j.enbuild.2020.110394
- Templeton, D. (Ed.). (1999). *Acoustics in the built environment: Advice for city planners and architects* (2nd ed.). Architectural Press.

UNIT IV:

This unit introduces the art and science of Visual Merchandising (VM), focusing on its role in retail and customer engagement.

- Bellizzi, J. A., Crowley, A. E., & Hasty, R. W. (1983). The effects of color in store design. *Journal of Retailing*, *59*(1), 21–45.
- Huddleston, P., Behe, B. K., Minahan, S., & Fernandez, R. T. (2015). The effect of visual merchandising on consumer impulse buying behavior. *The International Review of Retail, Distribution and Consumer Research*, *25*(1), 69–88. https://doi.org/10.1080/09593969.2014.911199
- Pegler, M. M., & Kong, A. (2018). *Visual merchandising and display* (7th ed.). Fairchild Books.
- Underhill, P. (2009). *Why we buy: The science of shopping* (Updated and rev. ed.). Simon & Schuster.

Suggested Readings

- Kibert, C. J. (2016). *Sustainable construction: Green building design and delivery* (4th ed.). Wiley.
- Ching, F. D. K . (2014). Building Construction Illustrated, Wiley, New Jersey
- DeChiara, J., Panero, J. & Zelnik, M. (2011). Time Saver Standards for Interior Design and space planning, second edition. McGraw-Hill Education
- Goel, S., Seetharaman, P. & Kakkar, A. (2015). Manual on Interior space designing, Elite publishing house
- Shah, M. G., Kale, C. M., Building drawing, 5th edition, Tata McGraw Hill publishing, New Delhi.

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

DISCIPLINE SPECIFIC ELECTIVE

CLIMATE CHANGE, ECOSYSTEM & SOCIETY: ISSUES & CONCERNS

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Climate Change, Ecosystem & Society: Issues & Concerns	4	3	0	1	As per admission norms	Nil

Learning Objectives

- To impart knowledge about science and policy of climate change along with climate vulnerabilities on different systems
- To understand the adaptation and mitigation strategies to deal with climate change for different sectors
- To learn about the policy framework for controlling climate change

Learning Outcomes

After completing the course, students will be able to:

- Understand concept of climate change, components of climate change system, global warming-causes and consequences
- Understand vulnerabilities and impact of climate change on different systems
- Gain insight into adaptation and mitigation strategies for different sectors
- Understand policies and programs –global and national to control climate change

THEORY
(Credits 3; Hours 45)

UNIT I: Concept, components and science of climate change **11 Hours**

This unit covers throws light on the history and components of climate change.

- History and evidence of climate change
- Natural and human induced causes of climate change
- Components of climate change system, Biosphere and geosphere
- Biogeochemical/Nutrient cycles
- Climate change, ecosystem and society

UNIT II: Climate Change-global-regional scenario and gender perspective 10 Hours

This unit throws light on recent issues, global scenario and gender perspective in climate change

- Recent issues in climate change (ozone hole, melting of glaciers, atmospheric brown clouds)
- Global scenario, climate resilience, natural resource management, future impacts of climate change
- Global warming- causes, consequences, greenhouse effect and greenhouse gases
- Gender perspectives on climate change

UNIT III: Vulnerabilities, adaptation and mitigation options for climate change 12 Hours

This unit focuses on impacts of climate change and vulnerable sectors along with adaptation and mitigation strategies.

- Impacts of climate change along with sectoral vulnerabilities on both natural and managed systems both present and projected on various sectors - Agriculture, forestry and bio-diversity; Human health, infrastructure, industry; Water resources, sea level rise; Extreme events
- Adaptation options for various sectors, factors affecting adaptation, strategies, constraints and consequences
- Mitigation strategies for various sectors, stabilisation scenario, mitigation options, programmes and initiatives, mitigation and sustainable development linkages
- Climate change mitigation programmes in energy and industry sector, Case studies with focus on India

- Recent issues in climate change, future impacts of climate change

UNIT IV: Policies and programs for controlling climate change 12 Hours

This unit throws light on the policy environment for climate change, both national and international.

- International efforts and policy frameworks - history, objectives, activities, equity issues, key issues in multilateral negotiations on climate change, international protocols, role and outcomes of UNFCCC, IPCC
- India's national policy framework, NAPCC-targets and achievements, PAT (Perform, Achieve, and Trade) scheme, Forest certification (FSC, SFI, PEFC)
- CO_2 sequestration, forests and other sinks in India, opportunities and concerns
- The global carbon market, Carbon Pricing, Carbon Tax, Emission reduction certificates

PRACTICAL

(Credit 1; Hours: 30)

- Climate change: causes, impacts, adaptation and mitigation strategies for different sectors – Review, analysis and creation of portfolio
- Conducting survey on assessing awareness about climate change related issues among different target groups
- Critically analyzing measures adopted by large industries to reduce their Greenhouse Gas (GHG) emissions through appraisal of mitigation and adaptation practices to climate change through industry cluster approach
- Adaptation and mitigation strategies/initiatives taken by central and state governments to tackle climate change - Analysis through policy implementation, feedback from stakeholders etc.
- Regional climate vulnerabilities and adaptation and mitigation strategies - Critical analysis with focus on different states and geographical locations
- Designing/developing and conducting need based training/awareness generation programs for different target groups towards lifestyle changes for reducing carbon footprint/climate change

Essential Readings:

UNIT I:

- Singh, A. K. (2023). *Global Warming and Climate Change : Story of India's Climate Disaster and How to Avoid it.* Chennai, India: Notion Press Media Pvt Ltd.
- Clack, T., Meral, Z., & Selisny, L. (2023). *Climate Change, Conflict and (In)Security: Hot War*. Routledge.
- IPCC. (2023). *AR6 Synthesis Report: Climate Change 2023*. IPCC.

UNIT II:

- Khare, N. (2025). *Climate Change in India: Impacts and Assessments*. CRC Press.
- Mital, M., & Gupta, P. (Eds.). (2025). *Environmental Studies: Resources and Sustainability - A Textbook and Practical Manual*. Elite Publishing.
- Ramesh, M. (2018). *The Climate Solution: India's Climate Change Crisis and What We Can Do About It.* Hachette India.

UNIT III:

- Srivastava, R. K., & Chakraborty, A. (Eds.). (2025). *Mitigation and Adaptation Strategies Against Climate Change in Natural Systems.* Springer.
- Sabel, C. F., & Victor, D. G. (2022). *Fixing the Climate: Strategies for an Uncertain World.* Princeton University Press.

UNIT IV:

- Kedia, S., Khanna, P., Raj, S., Amanuma, N., & Gupta, H. (2024). *Synergies between Climate Action and SDGs: Implications for Multilateralism*. SDG Charter, Act4Earth, and World Sustainable Development Summit. New Delhi: The Energy and Resources Institute.
- Deutscher, G. (2023). *Climate Debt: Combining The Science, Politics and Economics of Climate Change.* World Scientific Publishing Co Pte Ltd.

Suggested Readings:

- Agarwal, S.K. (2003). *Environmental Scenario for 21st Century*. New Delhi: APH.
- Hardy, J. (2003). *Climate Change: Causes, Effects and Solutions*. John Wiley & Sons.

- Kelkar, U., & Bhadwal, S. (2007). South Asian Regional Study on Climate Change Impacts and Adaptation: Implications for Human Development. Human Development Report 2007/2008. Fighting Climate Change: Human Solidarity in a Divided World. Human Development Report Office, Occasional Paper.
- Kovats, S., & Akhtar, R. (2008). Climate, climate change and human health in Asian cities. Environment and Urbanization 29 (1): 165-175.
- Pittock, B. (2009). Climate change: The science, impacts and solutions 2nd edition. CSIRO, Melbourne, and Earthscan, London.

Journal article (highly cited and relevant):

- Dubash, N. K. (2011). The politics of climate change in India: Power, interest and contested development. *IDS Bulletin*, *42*(2), 97–106.
- Singh, C., & Deshpande, T. (2016). How do we assess vulnerability to climate change in India? A systematic review of literature. *Mitigation and Adaptation Strategies for Global Change*, *21*, 1083–1106.
- Gulia, S., Goyal, S. K., Kumar, A., & C. S., P. (2021). Evolution of air pollution management policies and research gap assessment in India. *Science of The Total Environment*, *800*, 149594.

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

DISCIPLINE SPECIFIC ELECTIVE
DESIGN STRATEGIES & AUDIT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Design Strategies & Audit	**4**	**2**	**0**	**2**	**As per admission norms**	**Nil**

Learning Objectives

- Develop the ability to identify design problems and propose effective solutions for specific products or situations.
- Equip students with the skills to integrate sustainable design principles in products and services.
- Enhance analytical skills through design audits to assess the feasibility, viability, and sustainability of designs.

Learning Outcomes

After completing this course, students will be able to:

- Recognize design challenges and apply a life-cycle assessment approach to find suitable solutions.
- Assess and evaluate designs for safety, ergonomics, functionality, and sustainability through product audits.

THEORY
(Credits 2; Hours 30)

UNIT I: Product Semantics and User Experience **8 Hours**

This unit delves into product semantics, the emotional connection between users and products, and the development of a logical design approach.

- Theories of product semantics and their effect on design.
- Exploring product emotion, value, and attachment.
- Understanding product identity and its role in design.
- Usability and enhancing user experience through design.

UNIT II: Design as a Management Tool and Professional Practices 6 Hours

This unit focuses on the managerial aspects of design, including the evaluation process, team management, and professional ethics in design practices.

- Design evaluation, key designer attributes, and setting up a design office.
- Client relations, business correspondence, and managing the design process.
- Human factors in team management and design workflow.
- Legal aspects including ethics, design briefs, costing, patent registration, and fee estimation.

UNIT III: Product Interface Design 10 Hours

This unit covers designing and evaluating product interfaces with a focus on user-centered design, ergonomics, prototyping, and interaction within complex systems.

- Visual, functional, and ergonomic requirements of product interface design.
- Human factors and the importance of user-centered and participatory design.
- Scenario building, storyboarding, and prototyping for interactive design.
- Evaluating user interfaces and designing for complex system

UNIT IV: Product Analysis and Audit 6 Hours

This unit highlights analyzing products, understanding contextual applications, evaluating design guidelines, and conducting design audits.

- Product analysis- diachronic and synchronic
- Understanding and analysing contexts – parallel and future situations
- Evaluation of design guidelines
- Design audit

PRACTICAL

(Credits 2; Hours 60)

1. Product Design Audit: Conduct a critical design audit of an existing product, evaluating aesthetics, functionality, and usability.
2. Sustainability Assessment: Perform a sustainability audit on a product, analyzing materials, energy use, and environmental impact.
3. Safety Evaluation: Assess a product for safety compliance and potential hazards, proposing improvements.
4. Ergonomic Analysis: Examine a product for ergonomic efficiency and user comfort, suggesting design modifications.
5. User interface design portfolio
6. Critical evaluation of existing product
7. Finding solution to design problems
8. Sketches and design of improvised product
9. Prototyping new product based on improvised design of user-interface
10. Working on variations or different formats of the new product

Essential Readings

UNIT I:

This unit delves into product semantics, the emotional connection between users and products, and the development of a logical design approach.

- Krippendorff, K. (2006). *The Semantic Turn: A new foundation for design*. Boca Raton, London, New York: Taylor & Francis, CRC Press.
- Norman, D.A. (2004). *Emotional Design: Why we love (or hate) everyday things*. New York, NY: Basic Books.

UNIT II:

This unit focuses on the managerial aspects of design, including the evaluation process, team management, and professional ethics in design practices.

- John, T. (2005). In the bubble: designing in a complex world
- Agarwal, U. A., Jain, K., Anantatmula, V., & Shankar, S. (2023). *Managing people in projects for high performance: Behavioural approach to productive project teams*. Springer.

UNIT III:

This unit covers designing and evaluating product interfaces with a focus on user-centered design, ergonomics, prototyping, and interaction within complex systems.

- Rangaswamy, N., Sim, G. R., & Borah, P. P. (Eds.). (2025). *Human-Computer Interaction: Design and Research* (Vols. I & II). Springer.
- Khan, M. I. (2025). *Industrial ergonomics*. PHI Learning.
- Ghosh, A. (2024). *Mastering UX design with effective prototyping*. BPB Publications.
- Gandotra, V. et al. (2013). *Essentials of Ergonomics*, Dominant Publishers: Delhi
- William, L. (2003). *Universal Principles of design*, Rockport.

UNIT IV:

This unit highlights analyzing products, understanding contextual applications, evaluating design guidelines, and conducting design audits.

- Gander, C., & Vaidya, S. (2024). *Think like the minimalist*. Penguin Business.
- Tiwari, S. R., & Swarup, R. R. (2024). *Design thinking: A comprehensive textbook*. Wiley India.
- Jain, K., & Kalbande, A. (2023). *UI design: Key to captivate user understanding*. Sybgen Learning.

Suggested Readings:

- Jordan, Pat. (1998*). Human Factors in Product Design: Current Practice and Future Trends.* London: Taylor and Francis.
- Macleod, Dan. (1995). *The Ergonomics Edge: Improving Safety, Quality and Productivity*. New York: Nostrand Reinhold.
- Mugge, R. (2008). *Emotional Bonding with Products: Investigating Product Attachment from a Design Perspective*. VDM Verlag
- Norrid, B and Wilson, J.R. (2001). *Designing Safety into Products*. London: Taylor and Francis.
- Wilson, J.R. and Covlett, N. (2001). *Evaluation of Human Work: A Practical Ergonomics Methodology*. London: Taylor and Francis

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

HEALTH & SAFETY IN BUILT ENVIRONMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Health & Safety in Built Environment	**4**	**2**	**0**	**2**	**As per admission norms**	**Nil**

Learning Objectives

- To sensitize the students towards concept of health & safety in built environment with specific reference to indoor environment
- To build the ability to identify, assess, and manage risks related to air quality, thermal comfort, lighting, noise, and exposure to hazards.
- To equip students with practical knowledge of human health risk assessment and safety management practices relevant to buildings and indoor spaces.

Learning Outcomes

After completing the course, students should be able to:

- Explain how indoor environmental factors such as air quality, temperature, humidity, lighting, and acoustics influence human health and comfort.
- Understand the health and safety issues in built environment with respect to indoor environment quality
- Develop skills to carry out risk assessment and vulnerability analysis
- Get acquainted to environmental and safety management

THEORY

(Credits 2; Hours 30)

UNIT I: Introduction to concept of built environment **7 Hours**

This unit introduces the built environment through a sustainability lens, highlighting systems

thinking, interdependencies, and cross-sectoral approaches.

- Definition and components of built environment
- Whole house approach to built environment
- Introduction to safety and health issues in built Environment
- Impact of physical planning and zoning on health and safety

UNIT II: Fundamentals of the Indoor Environment **8 Hours**

This unit explores key parameters of indoor environmental quality and how they influence comfort, health, and productivity. Students learn to connect theory with real-world building performance.

- Indoor environment parameters: IAQ, Thermal comfort, Lighting and Acoustics
- Health and comfort in the indoor environment
- Indoor air pollution – causes, effects, prevention & control technologies
- Standards pertaining to IAQ guidelines (e.g., ASHRAE, ISHRAE, USEPA, WHO etc.)
- Management of the indoor environment
- Impact of IEQ on occupants' health and productivity

UNIT III: Human Health Risk Assessment (HHRA) **8 Hours**

This unit focuses on turning analysis into practical action. Students learn frameworks for evaluating health risks and planning interventions for real situations.

- Introduction to Human Health Risk Assessment with reference to indoor and outdoor spaces
- Steps in Human health Risk Assessment: Risk identification, Exposure Assessment, Dose-Response Relationship, Risk Communication, Quantification of Human Health Risk Assessment, Human Health Risk Assessment with respect to air, water, soil and water pollution
- Introduction to Social and Environmental Risk Screening

UNIT IV: Environment and Safety Management **7 Hours**

This unit explains how safety and sustainability practices are integrated into organisational systems, governance processes, and reporting frameworks.

- Review and comparison of Global and Indian legal provisions related to Occupational Safety and Health including OSHA and Factories Act

- Introduction to HAZOP and HCCA Studies
- The Total Quality Environment Management
- Introduction to Total Productive Maintenance (TPM), Pillars of TPM

PRACTICAL
(Credits 2; Hours 60)

1. **Mapping the built environment of a campus zone**: Mapping the built environment of a campus zone: Identification of key built-environment components (land use, circulation paths, green/open spaces, building footprints, and service areas) on sketches or existing floor/site plans, and annotation of associated health and safety implications such as noise, traffic exposure, and crowding. Preparation of a labelled map and a brief note summarising major risks and suggested improvements.
2. **Planning and zoning critique exercise:** Comparative review of photographs and plan excerpts from two contrasting neighbourhoods or campuses to examine physical planning and zoning features such as setbacks, mixed land use, open/green space, and traffic separation. Discussion and short written reflection on the likely impacts of these features on walkability, safety, and indoor environmental quality.
3. **Indoor environment parameter profiling:** Recording and interpretation of secondary or provided data for key indoor environmental parameters (temperature, relative humidity, noise levels, illuminance, and CO_2/$PM_{2.5}$) in a classroom or laboratory setting. Comparison of observed values with ASHRAE/ISHRAE/WHO benchmark ranges and completion of a short worksheet on expected comfort, health implications, and likely occupant complaints.
4. **Demonstration Session and Hands on Activity on IAQ Monitor:** Hands on experience on measuring and interpreting indoor air quality data using monitoring tools.
5. **Ventilation and layout assessment:** Analysis of room layout drawings to identify air flow paths, locations of windows and doors, occupancy density, and potential stagnant zones. Marking of likely indoor air quality and thermal comfort issues and preparation of brief recommendations for low-cost improvements such as changes in openings, use of fans, and revised seating layout.
6. **Design of a training module on "Health & Safety in Indoor Environments":** Small-group exercise in which students develop a short training package for facility managers or school/office staff, integrating concepts from all units on built environment, indoor environmental quality, health risk, and safety management. The activity involves identifying key indoor hazards (e.g.,

poor ventilation, inadequate lighting, noise, crowding), selecting appropriate control measures, and tailoring messages to non-technical audiences

7. **Screening environment for social and environmental risks**: Practical assessment of built spaces to identify risks that affect communities and ecosystems using standardised checklists. Analysing and reporting the results.
8. **Total Quality Environment Management (TQEM) walk-through:** Design of a brief TQEM checklist for an educational or office building focusing on environmental performance and safety (waste handling, energy use, indoor air quality, noise, water use, emergency readiness). In small groups they conduct a walk-through audit, rate performance on each item, and write a short report summarising strengths, non-conformities, and priority corrective actions.

Essential Readings:

UNIT I: Introduction to concept of built environment

- Corburn, J., & Cohen, A. K. (2023). *The built environment and public health* (2nd ed.). Wiley.
- Dovjak, M., & Krainer, A. (2019). *Creating healthy and sustainable buildings: An assessment of health risk factors.* Springer.
- Lopez, R. P. (2023). *The built environment and public health (2nd ed.).* John Wiley & Sons.

UNIT II: Fundamentals of Indoor Environment

- Datta, A., Kumar, P., Sharma, A., & Patel, D. (2023). *Indoor environmental quality in Indian non-residential buildings: Implications for occupants' health and comfort.* Building and Environment, 242, 110550.
- World Health Organization. (2010). *WHO guidelines for indoor air quality: Selected pollutants.* WHO.

UNIT III: Human Health Risk Assessment (HHRA)

- Dwivedi, S., et al. (2023). *Revelations to indoor air pollutants and health risk among women: A systematic review*. Environmental Challenges, 11, 100649.
- Felgueiras, F., Almeida, R. M. S. F., & Gameiro da Silva, M. (2023*). Indoor environmental quality in offices and risk of health symptoms: A review.* Building and Environment, 237, 110360.

UNIT IV: Environment and Safety Management

- Ministry of Labour & Employment, Government of India. (2025). *Key features of the OSH Code, 2020: Implementation primer*. India Briefing.
- PQRI. (2015). *HAZOP guide: Best practices for hazard and operability studies*. Product Quality Research Institute.
- Six Sigma Development Solutions. (2025). *8 pillars of total productive maintenance (TPM): A practical guide for manufacturing and facilities.* SixSigmaDSI.

Suggested Readings:

- Allen, J. G., & Macomber, J. D. (2020). *Healthy buildings: How indoor spaces drive performance and productivity*. Harvard University Press. library
- Burroughs, H.E.& Hansen, S. J. (2011*). Managing Indoor Air Quality*, 5th Edition.
- Datta, A., Kumar, P., Sharma, A., & Patel, D. (2023). *Indoor environmental quality in Indian non-residential buildings: Implications for occupants' health and comfort*. Building and Environment, 242, 110550.
- Green, R., & Parry, M. (2022). Built environment, climate resilience, and health: An emerging research agenda. *Journal of Environmental and Public Health*, Article 8897654.
- Mirzaei, N., Arfaei, N., & Yarahmadi, H. (2020). The impact of indoor environmental quality of green buildings on occupants' health: A systematic review. *Journal of Community Health Research*, 9(1), 54–65.
- REHVA. (2023). Indoor environmental quality and healthy buildings. *REHVA Journal.*

Journal articles (highly cited and relevant)

- Kent, J., & Thompson, S. (2012). Health and the built environment: Exploring foundations for a new interdisciplinary profession. *Health Promotion Journal of Australia,* 23(3), 163–170.
- World Health Organization, & UN-Habitat. (2011*). The built environment and health: An evidence review.* World Health Organization.
- Sharma, M., Khare, M., & Singh, S. (2025). Indoor particle number concentration measurements and associated exposure in Indian urban buildings. *Sustainable Cities and Society*, 112, 105084

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

DISCIPLINE SPECIFIC ELECTIVE

SOCIAL DESIGN METHODS AND RESEARCH

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Social Design Methods and Research	**4**	**3**	**0**	**1**	**As per admission norms**	**Nil**

Learning Objectives

- To understand the foundations, evolution, and global relevance of social design in addressing poverty, inequality, and sustainability.
- To learn key principles of human-centered, participatory, and inclusive design for working with diverse and marginalized communities.
- To gain knowledge of qualitative and quantitative research methods, ethical considerations, and their role in social design.
- To explore social innovation, systems thinking, CSR, and sustainability as frameworks for designing socially impactful solutions.

Learning Outcomes

- Students will be able to explain core concepts of social design, including its evolution, purpose, and relevance to contemporary social challenges.
- Students will demonstrate an understanding of inclusive and participatory design principles and their application to marginalized groups.
- Students will understand and differentiate qualitative and quantitative research methods and apply ethical considerations in design research.
- Students will be able to analyse social innovation models, CSR initiatives, and sustainability concepts to evaluate socially responsible design practices.

THEORY

(Credits 3; Hours 45)

UNIT I: Foundations of Social Design and Inclusive Research 11 Hours

This unit introduces the basics of social design, highlighting inclusive principles and ethical research methods for understanding social needs.

- Social Design Overview: Definition, evolution, and global challenges (poverty, inequality, sustainability)
- Design Principles: Human-centered, participatory, and inclusive design for social impact
- Research Methods: Integrating qualitative and quantitative methods; ethical considerations in social design.

UNIT II: Inclusivity, CSR, and Traditional Knowledge in Social Design 11 Hours

This unit focuses on designing for marginalized groups while integrating CSR practices and preserving traditional design knowledge.

- Inclusivity in Design: Designing for marginalized groups (elderly, differently-abled, low-income).
- Corporate Social Responsibility (CSR): Role of design in CSR for social well-being and environmental responsibility.
- Preserving Traditional Designs: Safeguarding indigenous practices and integrating traditional knowledge in modern design.

UNIT III: Social Innovation, Systems Thinking, and Sustainability 11 Hours

This unit explores how design drives social innovation through systems thinking and sustainable approaches with measurable impact.

- Social Innovation: Design's role in driving social change and addressing societal needs.
- Design Thinking & Systems Thinking: Approaches for creating scalable, sustainable solutions.
- Sustainability: Environmental, social, and economic sustainability in design projects; measuring social impact with assessment tools.

UNIT IV: Applications of Social Design in Communities and Public Spaces 12 Hours

This unit examines practical applications of social design in communities, public spaces, CSR initiatives, and advocacy.

- Community Empowerment: Engaging communities in participatory design for sustainable solutions.
- Inclusive Public & Health Spaces: Designing safe, accessible public spaces and environments that enhance physical and mental well-being.
- CSR & Advocacy in Design: CSR-based interventions (education, housing, sustainability) and using design for policy influence, social justice, and human rights.

PRACTICAL

(Credits 1; Hours 30)

1. Structured user research and insight building: Conduct surveys, interviews, focus groups, or mapping exercises to understand user needs, barriers, and aspirations; compile key insights.
2. Engagement with traditional craftspersons: Interact with traditional Indian artisans to learn about cultural knowledge, heritage practices, materials, and context-based design wisdom.
3. Participatory design and idea co-creation: Facilitate a co-design session with peers or mock community members to collaboratively generate and refine possible solution directions.
4. Concept framing and visual representation: Develop concept directions through sketches, storyboards, user journey maps, or design briefs to communicate proposed solutions.
5. Assessment of inclusivity and social relevance: Evaluate concept ideas for accessibility, inclusivity, feasibility, cultural sensitivity, and relevance to difference marginalized groups.
6. Feedback collection, refinement, and final presentation: Gather feedback through discussions or walkthroughs, refine the proposed solutions, and present the final concept with justification based on user insights and social impact.

Essential Readings

UNIT I:

This unit introduces the basics of social design, highlighting inclusive principles and ethical research methods for understanding social needs.

- Manzini, E. (2015). Design, when everybody designs: An introduction to design for social innovation. MIT Press.
- Brown, T., & Wyatt, J. (2009). Design Thinking for Social Innovation. Stanford Social Innovation Review, 8(1), 31–35. https://doi.org/10.48558/58Z7-3J85

UNIT II:

This unit focuses on designing for marginalized groups while integrating CSR practices and preserving traditional design knowledge.

- Noel, L.-A. (2023). *Design social change: Strategies for equity, inclusion, and belonging*. Ten Speed Press.
- National Institute of Urban Affairs. (2020). *An accessible, safe and inclusive city*. NIUA, Government of India.
- Ministry of Culture, Government of India. (2019). *Scheme for safeguarding the intangible cultural heritage*. Government of India.
- National Institute of Design. (2017). *Craft traditions of India*. National Institute of Design.
- Papanek, V. (2009). Design for the real world: Human ecology and social change (2nd ed.). Thames & Hudson.

UNIT III:

This unit explores how design drives social innovation through systems thinking and sustainable approaches with measurable impact.

- Manzini, E. (2015). Design, when everybody designs: An introduction to design for social innovation. MIT Press.
- Halse, J., Brandt, E., Clark, B., & Binder, T. (2010). Rehearsing the future: Social design experiments in innovation and democracy. Danish Design School Press.

UNIT IV:

This unit examines practical applications of social design in communities, public spaces, CSR initiatives, and advocacy.

- Amatullo, M., Boyer, B., May, S., & Shea, A. (Eds.). (2023). Design for social innovation: Case studies from around the world. Routledge.
- Government of India. (2015). *Accessible India campaign (Sugamya Bharat Abhiyan)*. Ministry of Social Justice and Empowerment.
- IDEO.org. (2015). The field guide to human-centered design. IDEO.org.
- Steinfeld, E., & Maisel, J. L. (2012). *Universal design: Creating inclusive environments*. Wiley.

Suggested Readings

- Melles, G. (Ed.). (2022). *Designing social innovation for sustainable livelihoods*. Springer.
- Denzin, N. K., & Lincoln, Y. S. (Eds.). (2018). The SAGE handbook of qualitative research (5th ed.). SAGE.
- Silverman, D. (2017). Doing qualitative research (5th ed.). SAGE.
- Muratovski, G. (2016). Research for designers: A guide to methods and practice. SAGE.
- Martin, B., & Hanington, B. M. (2012). Universal methods of design: 100 ways to research complex problems, develop innovative ideas, and design effective solutions. Rockport.

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

SEMESTER II

DISCIPLINE SPECIFIC CORE COURSE
ENTREPRENEURSHIP & ENTERPRISE MANAGEMENT

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Entrepreneurship & Enterprise Management	**4**	**2**	**0**	**2**	**As per admission norms**	**Nil**

Learning Objectives

- To build an innovative and entrepreneurial mindset among students
- To strengthen skills in opportunity identification, problem analysis, communication, and strategic planning for enterprise development
- To equip students with practical tools for designing, managing, marketing, and scaling new ventures
- To help students understand and apply concepts of business modelling, financial planning and resource management
- To enable students to assess legal, ethical, and sustainability considerations while developing entrepreneurial interventions at local and national levels

Learning Outcomes

After completing the course, students should be able to:

- Understand the fundamental of entrepreneurship, opportunity recognition, and innovation in entrepreneurship
- Apply the principles of entrepreneurship to design and evaluate new and innovative ventures.
- Analyse market insights, funding options, legal landscape and compliance needs that are essential to make informed business decisions
- Develop skills needed to manage, grow and sustain an enterprise

THEORY

(Credits 2; Hours 30)

UNIT I: Innovation and Entrepreneurship 7 Hours

This unit covers core ideas of innovation and entrepreneurship. It helps students understand how opportunities emerge, how creative thinking supports problem solving and how new ventures begin to take shape in different sectors.

- Nature and scope of entrepreneurship
- Innovation as a driver of opportunity, Types of innovation (product, process, business model, social)
- Entrepreneurial mindset, creative problem-solving, opportunity recognition and evaluating market potential
- Basics of new venture creation

UNIT II: Emerging Trends, Technology, and Enterprise Development 7 Hours

This unit explores the technological and market shifts that influence today's enterprises. It highlights how design practices and sustainability trends open new ventures.

- Technology disruptions shaping modern markets
- Innovation ecosystems: incubators, accelerators, and industry clusters
- Sustainability-driven and design-driven entrepreneurship
- Product development pathways and role of design thinking

UNIT III: Business Modelling, Planning, and New Venture Creation 7 Hours

This unit focuses on the practical process of shaping a new venture. It gives students the foundation to plan and launch viable enterprises by highlighting on customer research, value proposition, and business model development.

- Identifying a problem or market opportunity
- Process of launching a new venture- market research, analysis and segmentation
- Value proposition design, feasibility analysis, forming a team, leadership skills
- Preparing a structured business plan, risk assessments, pitfalls, and strategies for execution and growth

UNIT IV: Financial and legal aspects in Enterprise management 9 Hours

This unit outlines how new ventures secure and manage financial resources. It explains funding sources and valuation process. The unit highlights legal and ethical issues in enterprise management.

- Government schemes, grants, and entrepreneurial financial support systems
- Basics of valuation for early start-ups
- Tax considerations for new ventures, major hidden tax traps in business
- Intellectual Property Rights: patents, copyrights, trademarks, design rights, trade secrets
- Common legal and ethical pitfalls when starting a business

PRACTICAL

(Credits 2; Hours 60)

1. **Self-Assessment of Entrepreneurial Competencies:** Assessment and profiling of entrepreneurial competencies using validated assessment tools such as the Personal Entrepreneurial Competencies (PEC) framework, Locus of Control scale, and Creativity/Innovation. Write a short reflective report to summarise key findings.

2. **Opportunity Mapping and Venture Ideation:** Identify a need or challenge within a community, institution, or market segment through field observation, interviews, or secondary research. Analyse user behaviour, pain points, and existing solutions. Based on the findings, propose 2–3 opportunity areas and justify entrepreneurial potential. Present insights using simple tools such as empathy maps, need statements, or opportunity grids.
3. **Design-thinking and product/solution sketch:** Select one opportunity from the studio and conduct a mini design-thinking cycle: empathise with users via brief interviews, define a clear problem statement, and ideate multiple solution options. Develop a low-fidelity prototype (storyboard, paper interface, or service blueprint) and document how sustainability, inclusivity, and usability were considered; highlight which competencies—such as creativity, persistence, and communication—shaped

the final concept. Present outputs as empathy maps, "how-might-we" statements, and annotated sketches of the proposed product or service.

4. **Business Model and Financial Planning Exercise:** Prepare a viable business proposal. Define the value proposition, customer segments, channels, revenue streams, and key resources. Estimate basic cost components, prepare a simple budget, and calculate preliminary financial projections such as break-even point and cash-flow requirements. Suggest suitable funding sources for the venture based on scale, stage, and feasibility.

5. **Venture pitch and ecosystem exposure**: Interact with founders or managers to learn about challenges, ecosystem support, and growth strategies. Based on the entire practical work, prepare a structured pitch deck and present the venture idea, prototype, market justification, business model, and financial plan.

6. **Financial, legal and ethical readiness brief for start-ups**: Develop a 2–3 page brief for your proposed venture that outlines expected cost heads, tentative revenue streams, and feasible funding avenues such as government schemes, grants, or early-stage investors. Identify at least two legal and ethical risk areas (e.g., IP protection, tax compliance, advertising claims, data privacy) and propose preventive measures that reflect responsible entrepreneurial behaviour and commitment to long-term sustainability. Present the brief as structured sections or a checklist-based template suitable for early-stage founders.

Essential Readings

UNIT I

- Chhabra, T. N. (2024). *Entrepreneurship development. Sun* India Publication.
- **Desai, V. (2022).** *Dynamics of entrepreneurial development and management* (6th ed.). Himalaya Publishing House.
- **Gupta, A., & Srinivasan, R. (2020).** *Entrepreneurship development* (1st ed.). Oxford University Press India.

- **Khanka, S. S. (2021).** *Entrepreneurial development* (2nd ed.). S. Chand Publishing.
- **Tiwari, R., & Bhat, S. (2023).** *Entrepreneurship in India* (2nd ed.). McGraw Hill Education (India).

UNIT II

- **Nair, A., & Pandey, S. (2023).** *Innovation and entrepreneurship*. Bloomsbury India.
- Vaish, V. (2025). *India business guide: Startup to set-up*. Commercial Law Publishers.

UNIT III

- Hisrich, R. D., Peters, M. P., & Shepherd, D. A. (2025*). Entrepreneurship (12th ed.).* McGraw-Hill Education.
- Meyer, M. H., & Crane, F. G. (2024). *New venture creation: An innovator's guide to entrepreneurship (2nd ed.).* SAGE College Publishing.
- Puri, G. (2022). *Entrepreneurship: New venture creation*. SSDN Publishers.

UNIT IV

- **Agarwal, R., & Goyal, M. (2023).** *Start-up law and compliance in India*. Taxmann Publications.
- **Bansal, C. L. (2022).** *Taxation of business entities*. Taxmann Publications
- **Ganguli, P. (2020).** *Intellectual property rights* (3rd ed.). Tata McGraw-Hill Education.
- **Kumar, R., & Sharma, S. (2021).** *Financial management for entrepreneurs*. Taxmann Publications.
- **Sidana, N. (2024).** *Ethics, governance and compliance*. Bloomsbury India.

Suggested Readings

- Bhidé, A. (2023). *The venturesome economy: How innovation sustains prosperity in a more connected world.* Princeton University Press.
- Campbell, C. C. (2025). *Start. Scale. Exit. Repeat: The playbook for aspiring serial entrepreneurs.* Wiley.

- Holt, D. H. (2024). *Entrepreneurship: New venture creation (Updated ed.).* Pearson.
- Kuratko, D. F. (2021). *Entrepreneurship: Theory, process, and practice (12th ed.).* Cengage Learning.
- Liedtka, J., & Ogilvie, T. (2023*). Design thinking: A comprehensive textbook*. Wiley India.
- Radjou, N., Prabhu, J., & Ahuja, S. (2024). *Jugaad innovation: Think frugal, be flexible, generate breakthrough growth.* Random House India.

Journals articles (Highly cited and relevant)

- Dell'Era, C., & Verganti, R. (2023). Design thinking for entrepreneurship: An explorative inquiry into its application in practice. *The Design Journal*, 26(6), 987–1005
- Lal, M., & Thakur, S. (2025). Entrepreneurial education in emerging economies: A bibliometric analysis. *The IUP Journal of Entrepreneurship Development*, 22(3), 59–81.
- Murad, M., et al. (2024). The role of opportunity recognition, entrepreneurial social capital and education in shaping entrepreneurial intention. *International Journal of Management Education,* 22(3), 100872.
- Ratten, V. (2023). Entrepreneurship: Definitions, opportunities, challenges, and future research directions. *Journal of Organisational Effectiveness: People and Performance*, 10(3), 245–262.
- Roy, B., & Shakya, A. (2025). Make in India: Manufacturing policy and sectoral performance. *The IUP Journal of Entrepreneurship Development*, 22(2), 28–45.

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

DISCIPLINE SPECIFIC CORE COURSE
FINANCIAL PLANNING AND ACCOUNTING PRACTICES

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Financial Planning and Accounting Practices	**4**	**3**	**0**	**1**	**As per admission norms**	**NIL**

Learning Objectives

To provide basic knowledge regarding multiple accounting and financial aspects to students.

Learning Outcomes

1. Knowledge about principles and techniques of accounting information for decision-making and control
2. Acquire skills in the use of tools, techniques and processes of financial management in the realm of financial decision-making.

THEORY
(Credits 3; Hours 45)

UNIT I: Introduction to financial accounting and financial management **10 Hours**

- Concept, nature, and scope of financial accounting
- Financial accounting – generally accepted accounting principles (GAAP)
- Accounting process and system- journal, ledger& trial balance
- Cost accounting and Management accounting
- Objectives, nature and scope of financial management

UNIT II: Financial Statements & tools of financial analysis **10 Hours**

- Preparations of Profit and Loss accounts and Balance sheets
- Long-term Assets and Depreciation / Inventory

- Tools of financial analysis: Fund flow analysis and Cash flow analysis, Ratio analysis, Cost volume profit (break-even) analysis, Analysis of operating and financial leverages

UNIT III: Cost Accounting **15 Hours**

- Costing fundamentals: Cost concepts & classifications, Materials, Direct Labour and Direct Expenses, Overheads general, Overheads Distributions
- Costing for Specific Industries: Single or Output costing, Job, Batch and Contract costing, Process Costing, Operating costing
- Costing for Control: Budgetary control, Standard costing & Variance analysis, Marginal costing & Cost volume profit analysis

Unit IV: Management Accounting and Financial Planning **10 Hours**

- Raising long-term funds: Planning capital structure, Internal financing, Gaining access to Angel funding, Venture capital funding and Business loans.
- Managing short-term finance: Management of Working capital, Management of Inventories

PRACTICAL

(Credit 1; Hours 30)

1. Journal Entries and the Accounting Cycle

Record a series of business transactions in a general journal using the double-entry bookkeeping method.

2. Financial Statement Preparation

Prepare a complete set of financial statements (Income Statement, Balance Sheet, and Cash Flow Statement) using provided internal data for a fictional company.

3. Cost-Volume-Profit Analysis

Conduct a cost-volume-profit (CVP) analysis for a company offering a specific product or service, including breakeven analysis.

4. Depreciation Accounting

Hands-on activities for calculating depreciation using various methods.

5. Inventory Valuation

Calculate inventory balances using different methods such as FIFO (First In, First Out), LIFO (Last In, First Out), and Weighted Average.

6. Analysis and Interpretation of Financial Statement

Analyse the financial statements of a publicly traded company over the last three years.

7. Ratio Analysis

Analyse company performance by calculating key financial ratios (liquidity, profitability, efficiency, and solvency ratios) from the provided financial statements.

8. Fund Flow Analysis

Examination of real-world scenarios to illustrate fund flow analysis in practice.

9. Requirements of Working Capital

Analysing the working capital management practices of selected companies to identify best practices.

Essential Readings:

UNIT I:

- Tulsian. P. C. (2023). *Financial Accounting.* Pearson Education Narayanswami.
- Maheshwari S.N. & Maheshwari S. K. (2020). *An Introduction to Accountancy*. Vikas, 9th Edition.

UNIT II:

- Bhattacharya, A. K. (2020). *Essentials of Financial Accounting*. PHI, New Delhi.
- Brealey, A. R., Myers, C. S., Allen, F., Edmans, A., Mohanty, P. (2023), Principles of Corporate Finance, McGraw-Hill.
- Chandra, P. (2023). *Financial Management: Theory and Practice*. New Delhi: Tata McGraw Hill Publishing
- Ghosh. T. P. (2025). Indian *Accounting Standards & Corporate Standard Practices*. Taxman, 10th Edition.

UNIT III:

- Anthony, A. (2016). *Management Accounting*. London: Prentice Hall
- Mukherjee (2020). *Financial Accounting for Management.* TMH, 1st Edition.
- Ramchandran & Kakani. (2017). *Financial Accounting for Management.* TMH, 2nd Edition.
- SN Maheshwari & SN Mittal (2020), *Cost Accounting Principles &Practice*, A Mahavir Publication.

UNIT IV:

- Horngren, Charles T. (2014). *Introduction to Management Accounting*. New Delhi: Prentice Hall of India Private Ltd
- Kimmel. P.D. (2021). *Financial Accounting: Tools for Business Decision Making*. New York: John Wiley & Sons

Suggested Readings:

- Anthony, A. (2001). *Management Accounting*. London: Prentice Hall
- Bhattacharya, A. K. (2007). *Essentials of Financial Accounting*. PHI, New Delhi.
- Chandra, P. (2001). *Financial Management: Theory and Practice*. New Delhi: Tata McGraw Hill Publishing
- Damodaran, A. *Corporate Finance: Theory and Finance*. New York: John Wiley
- Ghosh. T. P. (1998). *Accounting and Finance for Managers*. Taxman, 1st Edition.
- Horngren, Charles T. (2001). *Introduction to Management Accounting*. New Delhi: Prentice hall of India Private Ltd
- Kimmel. P.D, (2000). *Financial Accounting: Tools for Business Decisions Making*. New York: John Wiley & Sons
- Maheshwari S.N. & Maheshwari S. K. (2007). *An Introduction to Accountancy*. Vikas, 9th Edition.
- Mukherjee. (2009). *Financial Accounting for Management.* TMH, 1st Edition.
- Ramchandran & Kakani. (2007). *Financial Accounting for Management.* TMH, 2nd Edition.
- Tulsian. P. C. (2008). *Financial Accounting.* Pearson Education Narayanswami.
- www.everant.org Account and Financial Management Journal(2020),Volume 5.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
ENERGY POLICY, SYSTEMS AND SUSTAINABILITY

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Energy Policy, Systems and Sustainability	**4**	**2**	**0**	**2**	**As per admission norms**	**Nil**

Learning Objectives

- To understand the global and Indian scenario of energy demand and supply
- To learn about the impact of energy consumption on the environment and climate change
- To understand the different types of energies, their availability and potential with emphasis on the renewable sources of energy
- To learn about the policies and legislative frameworks in India and globally, pertaining to the energy sector including key stakeholders
- To learn about energy conservation, benefits and challenges faced, energy audits and energy management

Learning Outcomes

After completing the course, students will be able to:

- Understand the global and Indian scenario of energy demand and supply
- Understand the impact of energy consumption on the environment and climate change
- Appreciate the different sources of energy and their availability
- Understand the global and Indian policy structure for the energy sector
- Understand energy conservation, audit and management

THEORY

(Credits 2; Hours 30)

UNIT I: Energy Sources: Global and Indian Energy Scenario 7 Hours

This unit throws light on the energy scenario in India and globally, impact of energy on economic development and the need for renewable energy sources.

- Energy resources and consumption in residential, commercial and institutional sector; relationship between energy and environment
- Role of energy in economic development and social transformation
- Energy sources, overall energy demand and availability
- Depletion of energy sources and its impact, need for renewable sources of energy
- Energy use and global climate change, GHG emissions, climate change debate

UNIT II: Energy Systems and Technologies 8 Hours

This unit focuses on present status and future prospects of various energy sources. It also focuses on the different conventional and renewable sources of energy.

- Conventional energy sources: sources, issues and challenges, applications, current status, advantages and disadvantages, technologies, future prospects
- Non-conventional energy sources: need, sources, current status, significance, technologies, applications, challenges and opportunities

UNIT III: Energy policy, legislative framework and energy strategy 7 Hours

This unit throws light on the Indian and global energy policy scenario.

- History of energy policy, International Energy Policies, international treaties and protocols
- Legislations guiding energy sector in India
- Energy Policy Issues
- Power sector reforms, restructuring of energy supply sector, energy strategy for future

UNIT IV: Energy Conservation and Auditing 8 Hours

This unit throws light on energy conservation, energy audit and management.

- Energy conservation measures across different consumer segments, benefits of energy conservation on economy and environment
- Challenges faced in energy conservation
- Techniques and strategies for reducing and managing energy use across industrial, commercial, agricultural, and domestic sectors
- Energy audits, technologies used in auditing, structure and components of energy audit reports

PRACTICAL

(Credit 2; Hours: 60)

- Conducting energy audits, optimizing energy usage in commercial, institutional and residential units through energy efficiency and use of renewable energy
- Government initiatives in renewable energy, legislative framework in the energy sector - Analysis through policy implementation, feedback from stakeholders etc.
- Calculation of solar rooftop potential using various applications/websites
- Energy conservation and efficiency - Analysis of the current scenario through primary and secondary review etc.
- Designing/developing and conducting training/awareness generation programme on energy management/renewable energy for different target groups
- Renewable energy project management through softwares

Essential Readings:

UNIT I:

- Yang, P. (2024). *Renewable Energy: Challenges and Solutions.* Springer.
- Paritosh, & Jain, A. (2023). *Energy Scenario in India*. Book World.

UNIT II:

- Deo, P., Chatterjee, S. K., & Modak, S. (2024). *Renewable Energy in India: Economics and Market Dynamics.* Atlantic Publishers & Distributors.

- Raj, D., Verma, A. K., Singh, A., & Kulkarni, A. (2024). *A Text Book Of Renewable Energy & Green Technology.* Book Rivers.
- Bollin, E. (2023). *Using Renewable Energies in Buildings: Heating and Cooling Supply, Automation, Executed Examples.* Springer.

UNIT III:

- Mital, M., & Gupta, P. (Eds.). (2025). *Environmental Studies: Resources and Sustainability - A Textbook and Practical Manual.* Elite Publishing.
- Sharma, A. (2024). *India's Quest for Energy Security: India's Roadmap to becoming an Energy Independent Nation.* Notion Press.
- Thapar, S. (2024). *Renewable Energy: Policies, Project Management and Economics.* Springer.

UNIT IV:

- Saxena, B. (2024). *Essentials Of Energy Management and Audit*. BFC Publications Pvt Ltd
- Sethuraman, A. (2020). *Practical Guide to Energy Conservation & Management.* Notion Press.

Suggested Readings:

- Kanoglu, M., Cengel, Y. A., & Cimbala, J. M. (2020). *Fundamentals and Applications of Renewable Energy.* McGraw Hill.
- International Energy Agency (2017). *Energy Technology Perspectives 2017.* Paris, International Energy Agency.
- Kothari, P., Singal, K. C., & Ranjan, R. (2008). *Renewable Energy Sources and Emerging Technologies.* PHI Pvt. Ltd.: New Delhi.
- Kishore, V. V. N. (2008). *Renewable energy engineering and technology – A knowledge compendium.* TERI Press: New Delhi.
- Kreith, F., & Yogi Goswami D. (2007). *Handbook of Energy Efficiency and Renewable Energy*. CRC Press.

Journal Articles (highly cited and relevant)

- Bhattacharyya, S. C. (2018). India's energy policies: Past, present, and future. *Energy Policy*, *117*, 303–318.
- Kumar, A., Gaur, S., & Kr, M. (2010). Renewable energy in India: Current status and future potentials. *Renewable and Sustainable Energy Reviews*, *14*(8), 2434–2442.
- Bhandari, D., Bansal, S., & Baveja, S. (2018). The perform, achieve and trade scheme in India: An effectiveness analysis. *Renewable and Sustainable Energy Reviews*, *96*, 387–396.
- Thapar, S., & Verma, A. (2016). Economic and environmental effectiveness of renewable energy policy instruments: Best practices from India. *Renewable and Sustainable Energy Reviews*, *66*, 487–498.
- Purohit, I., & Purohit, P. (2019). Wind energy development and policy in India: A review. *Energy Policy*, *125*, 302–321.
- Painuly, J. P. (2006). A review of energy conservation initiatives by the Government of India. *Energy Policy*, *34*(18), 3769–3782.

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

DISCIPLINE SPECIFIC ELECTIVE
ERGONOMICS AND OCCUPATIONAL SAFETY MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Ergonomics and Occupational Safety Management	**4**	**3**	**0**	**1**	**As per admission norms**	**Nil**

Learning Objectives

- Understand the principles of human-machine systems and their role in optimizing worker performance and safety.
- Analyze the impact of work posture and stress on health, productivity, and ergonomics.
- Learn techniques for ergonomic task analysis, risk assessment, and hazard management in the workplace.
- Explore modern trends in occupational safety, ergonomic design, and strategies to reduce health risks.
- Understand the integration of health regulations and ergonomic practices to enhance worker well-being and safety.

Learning Outcomes

- Demonstrate understanding of human-machine systems and how to align tasks with human capabilities to reduce strain.
- Analyze the impact of occupational stress, work posture, and ergonomic risk factors on health and productivity.
- Apply ergonomic task analysis and risk assessment techniques to identify and manage workplace hazards.

- Explore modern trends in ergonomics, focusing on stress reduction, posture improvement, and long-term health benefits.
- Understand occupational safety and health regulations and how ergonomic design enhances worker protection and compliance with standards.

THEORY

(Credits 3; Hours 45)

UNIT I: Occupational Stressors in the Workplace 15 Hours

This unit focuses on identifying workplace stressors at home, office and industrial setups, understanding MSDs and their causes, and examining safety practices guided by OSHA and NIOSH.

- Occupational stress -Physical Discomfort and Strain, Environmental Stressors, Mental and Emotional Stress, Organizational Factors
- Musculoskeletal Disorders (MSDs) in the Workplace: Definition, Types, and Causes
- Preventing Musculoskeletal Disorders (MSDs) in the Workplace-
  -Health monitoring protective equipment
  -safe work practices
  -safety of equipment
- Occupational safety analysis-OSHA, NIOSH

UNIT II: Ergonomic Factors and Workstation Design 10 Hours

This unit provides an overview of ergonomic design elements, risks associated with poorly designed workstations, and approaches to creating safer, more efficient work environments.

- Ergonomic factors in the design of workplace, equipment and tools, Influence of ergonomic design on worker health and productivity, Hazards associated with poor designed workstations
- Strategies for improving workstation and equipment design for optimal comfort and safety

UNIT III: Kinesiological and Biomechanical Concepts in Work Posture 12 Hours

This unit covers the fundamentals of kinesiology and biomechanics, the importance

of proper work posture, and the types of postures for various occupational tasks.

- Kinesiology and biomechanics, human leverage system and its mechanical benefits
- Importance of proper work posture
- Types of work postures for various tasks
- Application of biomechanics in occupational safety- to prevent accidents and reduce physical stress on workers.

UNIT IV: Risk Assessment in Occupational Ergonomics 8 Hours

This unit deals with applying subjective and objective ergonomic assessments to improve worker posture, safety, and efficiency.

Subjective and objective assessment- Postural analysis tools (REBA (Rapid Entire Body Assessment), RULA (Rapid Upper Limb Assessment), and OWAS (Ovako Working Posture Analysis System), WERA (Workplace Ergonomics Risk Assessment)

PRACTICAL

(Credits 1; Hours 30)

1. Task analysis for the selected occupation
   - Identify and describe the specific tasks involved in the selected occupation
   -Task Categorization -physical demands (e.g., sitting, standing, lifting), mental effort (e.g., decision-making, problem-solving), and repetitive actions (e.g., typing, data entry).
   -Task Duration and Frequency
   -Tools and Equipment required to perform the task
2. Postural and Risk Assessment
   -Observe and document the postures that user adopt while performing each task
   -Use postural evaluation tools such as (REBA (Rapid Entire Body Assessment), RULA (Rapid Upper Limb Assessment), and OWAS (Ovako Working Posture Analysis System),WERA (Workplace Ergonomics Risk Assessment) to objectively assess the risk of musculoskeletal disorders (MSDs) related to posture.
3. Designing workstation/equipment based on ergonomic assessment and Occupational safety analysis of the selected workplaces

4. Design OSHA/NIOSH safety and health checklist

Essential Readings

UNIT I:

This unit focuses on identifying workplace stressors at home, office and industrial setups, understanding MSDs and their causes, and examining safety practices guided by OSHA and NIOSH.

- Sarma, A. M. (2025). *Occupational health and safety at work*. Himalaya Publishing House.
- Satapathy, S., Realyvásquez Vargas, A., & Mishra, M. (2023). *Occupational Health Safety Factors and Their Impact on the Mental Health of Workers*. Springer Singapore.
- Bridger, R. (2017). *Introduction to Human Factors and Ergonomics*. CRC Press.

UNIT II:

This unit provides an overview of ergonomic design elements, risks associated with poorly designed workstations, and approaches to creating safer, more efficient work environments.

- Salvendy, G. (2012). *Handbook of Human Factors and Ergonomics*. John Wiley & Sons.
- Tosi, F. (2019). *Design for Ergonomics*. Springer Nature.
- Steidl, R.E. & Bratton, E.C. (1968). *Work in the Home*. John Wiley & Sons Inc.

UNIT III:

This unit covers the fundamentals of kinesiology and biomechanics, the importance of proper work posture, and the types of postures for various occupational tasks.

- Koley, S. (2024). *Textbook of biomechanics*. AITBS Publishers, India.
- G, P. Kumar, & De Souza, I. G. (2022). *Textbook of biomechanics & kinesiology: Detailed analysis of musculoskeletal structure and function*. Jaypee Brothers Medical Publishers.
- Chakrabarti, D. (1997). *Indian Anthropometric Dimensions for Ergonomic Design Practice*. National Institute of Design.

UNIT IV:

This unit deals with applying subjective and objective ergonomic assessments to improve worker posture, safety, and efficiency.

- Mukhopadhyay, P. (2022). *Ergonomics principles in design: An illustrated fundamental approach*. CRC Press/Taylor & Francis Group.
- Ray, P. K., & Maiti, J. (Eds.). (2018). *Ergonomic design of products and worksystems: 21st century perspectives of Asia*. Springer.

Suggested Readings:

- Hedge, A. (2016). *Ergonomic Workplace Design for Health, Wellness, and Productivity*. CRC Press.
- Stanton, N. A., Hedge, A., Brookhuis, K., Salas, E., & Hendrick, H. W. (2004). *Handbook of Human Factors and Ergonomics Methods*. CRC Press.
- Helander, M. (2005). *A Guide to Human Factors and Ergonomics* (2nd ed.). CRC Press.

  Shorrock, S., & Williams, C. (2016). *Human Factors and Ergonomics in Practice: Improving System Performance and Human Well-Being in the Real World*. CRC Press.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

POLICIES AND TECHNOLOGIES FOR WASTE MANAGEMENT

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Policies and Technologies for Waste Management	4	2	0	2	As per admission norms	Nil

Learning Objectives

- To understand the problems different types of wastes
- To gain insights into various aspects of waste management
- To understand the policy structure for waste management in the country
- To learn about the environment and health impacts of waste mismanagement

Learning Outcomes

After completing the course, students will be able to:

- Understand the problems associated with wastes
- Understand the various aspects of waste management
- Understand the policy framework for waste management in India
- Understand the environment and health impacts of waste mismanagement

THEORY
(Credits 2; Hours 30)

UNIT I: Waste management: Global and Indian Scenario 7 Hours

This unit throws light on the waste generation scenario in India and globally, and its impact on environment and health.

- Definition, Types and Categories of Waste
- Sources and types of waste in different countries, associated challenges
- Quantum of waste generated globally and in India
- Need and importance of waste management for homes, institutions, industries and commercial establishments

UNIT II: Policy and Legislative Framework Waste Management 8 Hours

This unit throws light on the Indian and global waste policy scenario.

- International policy scenario for waste management
- Waste management rules in India for MSW, Biomedical waste, e-waste and other hazardous wastes in India
- Extended producer responsibility (EPR)
- Circular Economy and its benefits, Case studies

UNIT III: Technologies for Waste Management 8 Hours

This unit focuses on various technologies for waste management.

- Classification, present scenario of disposal technologies used for waste management
- Waste prevention and 7Rs principles
- Sources, composition, properties, management technologies for different types of wastes – Municipal Solid Waste (MSW), waste water, biomedical waste, hazardous waste, e-waste, industrial waste, agricultural waste, C&D waste, plastic waste, nuclear waste etc.
- Bio-waste – Definition, physicochemical characteristics, sourcing, issue of waste segregation and packaging, food waste, composting technologies, anaerobic digestion (biogas), bio-fuels
- Energy recovery from wastes – RDF, waste to energy plants etc.
- Innovations in waste management

UNIT IV: Environmental and Health Impacts of Waste Mismanagement

7 Hours

This unit explains how improper waste disposal affects ecosystems and human wellbeing.

- Air, water, and soil pollution from open dumping and burning
- Health risks to waste workers, ragpickers, and nearby communities
- Spread of infectious diseases from biomedical and mismanaged waste
- Long-term ecological impacts: contamination of groundwater, biodiversity loss, and toxic exposure

PRACTICAL

(Credit 2; Hours: 60)

- Government initiatives on waste management – Analysis through policy implementation, feedback from stakeholders etc.
- Legislative framework in the waste management sector – Critical analysis with focus on different types of wastes, current market scenario etc.
- Initiatives towards Extended Producer Responsibility (EPR) – Analysis of the current scenario through primary and secondary review etc.
- Designing/developing and conducting training/awareness generation programmes on waste management for different target groups
- Management technologies and innovations for managing different types of wastes in commercial, institutional and residential units – Analysis, review and generation of innovative ideas etc.

Essential Readings:

UNIT I:

- Bhatia, S. (2023). *Solid and Hazardous Waste Management*. Atlantic Publishers and Distributors.
- Natesan, U., & Sumathi, V. R. (2021). *Solid Waste Management in an Indian Scenario*. Grin Verlag.

UNIT II:

- Mital, M., & Gupta, P. (Eds.). (2025). *Environmental Studies: Resources and Sustainability - A Textbook and Practical Manual.* Elite Publishing.
- Sinha, G. N. (2024). *E-Waste Management: Governance and Policy Options.* M/s Bishen Singh Mahendra Pal Singh.
- Ghosh, S. K., Samanta, S., Hirani, H., & Vieira da Silva, C. R. (2022). *Effective Waste Management and Circular Economy: Legislative Framework and Strategies (The Circular Economy in Sustainable Solid and Liquid Waste Management).* CRC Press.

UNIT III:

- Sarkar, R. R. (2023). *Waste to Energy Efficient Municipal Solid Waste Management.* Abhijeet Publications.
- Rathoure, A. K. (2021). *Sustainable Practices for Waste Management.* Discovery Publishing House Pvt. Ltd.
- Panda, H. (2019). *Biomedical Waste: Management, Recycling and Applications.* Discovery Publishing House Pvt. Ltd.

UNIT IV:

- Marfe, G, & Stefano, C. D. (2020). *Risks and Challenges of Hazardous Waste Management: Reviews and Case Studies.* Bentham Science Publishers.

Suggested Readings:

- Cherry, P. M. (2016). *Solid and Hazardous Waste Management*. CBS HB.
- Bhatt, M. S. (2012). *Solid Waste Management: An Indian Perspective.* Synergy Books India.
- Srivastava, M. L. (2012). *Waste Management.* Random Publications.
- Ramachandra, T. V. (2009). *Management of Municipal Solid Waste*. The Energy and Resources Institute.

Journal articles (High Citation Count & Broad Overview)

1. Wilson, K. V., Williams, L. M., Kemp, S. L., Smith, A. D. C., Murphy, S., & Smith, M. P. (2017). Challenges and opportunities associated with waste management in India. *Royal Society Open Science*, *4*(3), 160764.
2. Dwivedy, M., & Mittal, R. K. (2017). Assessment of legislation and practices for the sustainable management of waste electrical and electronic equipment in India. *Renewable and Sustainable Energy Reviews*, *76*, 1245–1254.
3. Prabhakar, A. K., Dong, J. J., & Mees, A. (2022). Plastic waste management in India: Challenges and opportunities. *Sustainability*, *14*(18), 1167.
4. Kamble, S. S., Gunasekaran, A., Gawankar, S. A., & Manupati, V. K. (2023). Smart waste management 4.0: The transition from a systematic literature review on the role of industry 4.0 technologies to a framework for smart waste management. *Waste Management*, *165*, 247–263.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
PROFESSIONAL DESIGN METHODS & START-UPS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Professional Design Methods & Start-Ups	**4**	**3**	**0**	**1**	**As per admission norms**	**Nil**

Learning Objectives

- To introduce students to professional ethics, design practices, and the importance of Intellectual Property Rights (IPR) in design
- To equip students with the knowledge and skills required to conceptualize, initiate, and manage a startup
- To provide an understanding of financial planning, marketing strategies, and branding for design startups
- To develop students' ability to create a professional design portfolio, prepare a business model, and engage in startup simulations
- To prepare students for real-world design challenges through industry observation and practical exercises.

Learning Outcomes

After completing this course, students will be able to:

- Understand the significance of startups and how to identify business opportunities
- Understand professional ethics, design standards, and IPR in design
- Develop skills to conceptualize, analyze, and initiate a startup
- Build a professional design portfolio and pitch startup ideas
- Apply industry insights through observation and hands-on simulation exercises.

THEORY

(Credits 3; Hours 45)

UNIT I: Foundations of Professional Design Practices and Intellectual Property Rights **12 Hours**

This unit focuses on professional design practices, real-world project experience, industry collaboration, and safeguarding creative work through Intellectual Property Rights.

- Collaborating with design-related industries (interior, event, landscape, facilities, product development, furniture, upcycling/recycling), focusing on manpower, guidance, product strategies, and design approaches.
- Engaging with real-life projects
- Developing a future-oriented project with commercial potential for a specific industry.
- Building a professional network with relevant industries.
- Understanding the significance and procedures of Intellectual Property Rights (IPR)**,** including patents, copyright, industrial designs, trademarks, service marks, layout designs of integrated circuits, and geographical indications.
- Applying for appropriate IPR to safeguard designs from plagiarism

UNIT II: Initiating a Design Startup **10 Hours**

This unit delves into exploring viable design startup ideas, assessing feasibility, and building a comprehensive professional portfolio.

- Exploring a startup idea or business opportunity through market analysis and understanding consumer needs, including:
  - Developing viable concepts through ideation, conceptualization, and innovation
  - Assessing feasibility in terms of technology, market potential, financial viability, and human resources
- Developing a personal and professional portfolio that reflects technical skills, as well as social, economic, and environmental considerations.

UNIT III: Marketing, and Branding for Design Startups 15 Hours

This unit highlights marketing, branding, organizational structure, startup registration, problem-solving, and government support for design startups.

- Marketing and branding: market segmentation, USP, brand building
- Identifying structure for the startup organization: sole proprietorship, partnership, limited company, co-operative, franchise or social enterprises
- Identifying challenges and solving problems for a successful startup
- Registration process: selecting a company name, acquiring digital signature certificate (DSC) and Director Identification Number (DIN), filling relevant forms with supporting documents, registration of the startup
- Government programmes and policies supporting startups

UNIT IV: Financial Planning for Design Startups 8 Hours

This unit covers financial planning, cost estimation, funding sources, legal compliance, and business plan development for design startups.

- Preparing cost estimates for technical, manpower and other resources; recurring and non-recurring; rate of return and break-even analysis; overheads / operational costs
- Financial analysis, support systems and funding: sources of funding, costing and budgeting, formal and informal sources of support, networking
- Legal & ethical compliance: regulations, taxation, business ethics
- Writing a business plan

PRACTICAL

(Credits 1; Hours 30)

1. Interacting with design-related industries (interior products, event design and decor, landscape design, facilities and services management, new product development, furniture design, upcycling, refurbishing, recycling, etc.)
2. Engaging with real-life projects

3. Developing a future project with commercial potential
4. Building a network of collaboration with relevant industries
5. Developing a personal and professional portfolio
6. Enhancing professional skills for presenting design projects
7. Reviewing success stories of startups and enterprises.
8. Preparing a comprehensive business plan for a startup, including financial analysis, legal and ethical compliance, marketing, and branding
9. Registering the startup
10. Executing the startup project

Essential Readings

UNIT I:

This unit focuses on professional design practices, real-world project experience, industry collaboration, and safeguarding creative work through Intellectual Property Rights.

- Ramkumar, M., & Jayakumar, A. (Eds.) (2022). *Intellectual property rights demystified*. New India Publishing Agency.
- Babel, R. (2021). *Laws relating to intellectual property rights in India*. Bloomsbury Professional India.

UNIT II:

This unit delves into exploring viable design startup ideas, assessing feasibility, and building a comprehensive professional portfolio.

- Taneja, H., & Lahiri, S. (2021). *Design thinking for startups: An actionable guide for building innovative businesses*. Wiley.
- Brown, T., & Katz, B. (2020). *Change by design: How design thinking creates new alternatives for business and society* (Revised ed.). Harper Business.
- Soota, A., & Gopalan, S. R. (2021). *Entrepreneurship simplified: From idea to IPO*. Penguin Portfolio.

UNIT III:

This unit highlights marketing, branding, organizational structure, startup

registration, problem-solving, and government support for design startups.

- Anantham, M. (2025). *Company Registration: Starting Up in India — A Step- by- Step Guide*. Self- Published/India Business Press.
- Binns, S. (2021). *Building the future: Big team, big ideas, small startups, and how to make them work*. Wiley
- Blank, S., & Dorf, B. (2020). *The startup owner's manual: The step-by-step guide for building a great company* . K&S Ranch.

UNIT IV:

This unit covers financial planning, cost estimation, funding sources, legal compliance, and business plan development for design startups.

- Kawase, M. (2022). *Financial planning for startups: A hands-on guide to launching and managing your business finances*. Routledge.
- Gandhi, S. (2021). *Indian Startups, SMEs, & Financial Literacy: Business finance basics entrepreneurs must know*. Notion Press Media Pvt Ltd

Suggested Readings:

- O'Reilly, C. A., & Tushman, M. L. (2021). *Lead and disrupt: How to solve the innovator's dilemma*. Stanford Business Books.
- Wheeler, A. (2022). *Designing brand identity: An essential guide for the whole branding team* (6th ed.). Wiley.
- Klein, D. (2021). *AI and automation for business growth: Leveraging technology to scale your startup*. Springer.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

INTEGRATING SUSTAINABLE DEVELOPMENT IN PRACTICE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Integrating Sustainable Development in Practice	**4**	**2**	**0**	**2**	**As per admission norms**	**Nil**

Learning Objectives

- To develop an understanding of the integrated and systems-based approach to sustainable development
- To impart skills in applying sustainability frameworks to real-world challenges
- To empower students to design, implement, and evaluate practical sustainability interventions
- To enhance competencies in multi-stakeholder engagement, communication, and evidence-based decision making

Learning Outcomes

After completing the course, students should be able to:

- Understand the connections between social, economic, and environmental issues, and how integrated approaches can address them
- Evaluate the role of various local, national, and international frameworks that drive sustainability transitions
- Apply integrated development approaches to analyse, design, and evaluate sustainability solutions.
- Work effectively with communities, networks, and stakeholders to drive sustainable change.

THEORY
(Credits 2; Hours 30)

UNIT I: Foundations of Sustainable Development in Practice 7 Hours

This unit covers an understanding of integrated sustainable development by linking systems thinking, interdependencies, and cross-sectoral approaches.

- Revisiting Sustainability- from theory to practice
- Interlinkages and inter-dependence between social, economic and environmental issues- Concept of integrated approach to sustainable development
- Case examples of sustainability practice in India and globally

UNIT II: Tools and Methods for Analysing Sustainability Issues 8 Hours

This unit explores practical tools used across sustainable development projects that translate theory into field-level action.

- Problem Tree, Objective Tree, and Causal Analysis
- Stakeholder analysis and mapping
- Synergies and trade-offs assessment
- Baseline studies and rapid rural/urban appraisal
- Prioritising issues and identifying entry points for action

UNIT III: Challenges and Opportunities for Sustainability Solutions 8 Hours

This unit focuses on turning analysis into action. It introduces solution design for real-world challenges and teaches students to plan interventions.

- Drivers and barriers in adopting an integrated approach to sustainable development, such as policy silos, resource constraints, competing priorities, and measuring outcomes
- Opportunities for integration, such as emerging technologies, innovation, public-private partnerships, traditional knowledges, good practices around the globe, etc.
- Approaches: low-carbon development, circular economy, green livelihoods, climate adaptation
- Communicating sustainability to influence behaviour and policy

UNIT IV: Institutionalizing and Monitoring Sustainability 7 Hours

This unit outlines how sustainability practices are embedded within organisations and systems. It highlights processes for integrating sustainability into planning, governance, and decision-making, and introduces methods for tracking and reporting sustainability performance.

- Mainstreaming sustainable development issues into planning processes
- Strategic framework and process for integrated sustainable development-institution building, analysis, creating dialogue, planning, communicating, financing, implementing and monitoring
- Monitoring and evaluation for tracking progress in sustainability projects: characteristics of effective monitoring, challenges.
- National and global reporting systems (NIF, SDG Index, Voluntary National Reviews)

PRACTICAL
(Credits 2; Hours 60)

1. **Community-Based Sustainability Diagnosis:** Study one sustainability issue in a community/campus, map SDG links, and identify gaps to be addressed. Record baseline data for indicators like Waste: bags/day, overflow count/day, segregation accuracy %;

   Water: leak points count, tanker frequency, tap wastage observations;

   Mobility: vehicles/hour, parking occupancy %, average commute time;

   Livelihood: days of work/week, income variability score, access barrier count

2. **Designing a Sustainability Intervention**: Develop an intervention plan for a sustainability challenge. Include solution options, behavioural strategies, resource needs, risk analysis, and expected outcomes. Use ToC or Results Framework for design clarity. It may focus on waste reduction, water conservation, energy efficiency, campus sustainability, or a community-based initiative.

3. **Implementation of sustainability intervention-** Implement a small-scale sustainability intervention designed in the earlier practical sessions. Carry out planning, mobilisation, and execution steps; document processes; collect simple before–and–after observations or feedback; and reflect on challenges, outcomes, and learning. A short implementation report and presentation will summarise the

experience.

4. **Communication for Sustainable Development:** Create a communication product (poster, video, social media content, campaign kit) for a sustainability issue. Identify audience, key messaging, and behaviour-change components. Review campaign effectiveness using simple indicators.

5. **Stakeholder Engagement:** Conduct stakeholder profiling for a sustainability project. Prepare an interest–influence matrix and propose engagement strategies. Analyse potential conflicts, partnerships, and opportunities.

Essential Readings:

UNIT I

- Ghosh, J. (2022). *The making of a sustainable economy: Policies for India's future*. Penguin Random House India.
- Prakasam, N. (2023). *Back to Bharat: In search of a sustainable future*. Penguin Random House India Private Limited.
- United Nations Development Programme (2024). UNDP Sustainable Development Report: Practical pathways for accelerating the SDGs. UNDP Publishing.
- Whitby, A. (2019). *Advancing education for sustainable development: key success factors for policy and practice*. World Future Council Foundation.

UNIT II

- Dhamija, A., Misra, N., & Gogoi, I. S. (2019). *Project logical framework workbook for strategic planning of urban projects (Project logical framework workbook)*. National Institute of Urban Affairs (CITIIS).
- Khosla, A., & Sethi, M. (Eds.). (2023). *Sustainable development in India: Pathways, practices, and policy innovations*. Oxford University Press.
- Ramachandra, T. V., & Sudhira, H. S. (2023). *Sustainable urban planning in India: Integrating environment, economy, and society*. Routledge India.

UNIT III

- Gupta, D. (2025). *Framing India's low carbon development pathways*. Cambridge University Press.

- Nagendra, H., & Mundoli, S. (2023). *Shades of blue: Connecting the drops in India's cities*. Penguin Random House India.

UNIT IV

- Basu, D., Adhikary, M. M., & Biswas, D. (2007). *Participatory monitoring and evaluation of development programmes: Practitioners' guide*. Agrotech Publishing Academy.
- Dhamija, A., Misra, N., & Gogoi, I. S. (2019). *Project logical framework workbook for strategic planning of urban projects* . National Institute of Urban Affairs (CITIIS).
- Karnam, G. (2022). *Public expenditure in India: Policies and development outcomes*. Oxford University Press.
- Sidana, N. (2025). *Viksit Bharat@2047*. Bloomsbury Quest (Bloomsbury Publishing India Pvt. Ltd.).

Suggested Readings

- Blewitt, J. (2023). *Understanding sustainable development (4th ed.).* Routledge.
- Swilling, M., Hajer, M., & Baynes, T. (2023). *Sustainability transitions in practice.* Edward Elgar.
- Steve Bass, David H. Smith and Michael Stanley-Jones (2023). *Sustainable Development in Practice: Integrating Environment, Climate and Poverty Reduction.* United Nations Development Programme–United Nations Environment Programme Poverty-Environment Action: Nairobi.
- Lee, N. and C. Kirkpatrick (Eds). 2000. *Integrated Appraisal and Sustainable Development in a Developing World.* Cheltenham, Edward Elgar.

Journal Articles

- Bandari, R., et al. (2024). *Transdisciplinary approaches to local sustainability and SDGs.* Sustainability Science, *19*, 1293–1312.
- Lella, L., Oses-Eraso, N., & Stamos, I. (2024). *SDG monitoring frameworks for regions.* Ecological Indicators, *166*, 112248.
- Sreenivasan, A., Suresh, M., & Nedungadi, P. (2023). *AHP research linked to SDGs*. Heliyon, 9, e19077.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

DESIGN PROCESSES IN BUILT SPACES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Design Processes in Built Spaces	**4**	**2**	**0**	**2**	**As per admission norm**	**Nil**

Learning Objectives

- Examine methods for urban context analysis, site zoning, microclimate study, and comprehensive movement planning in built environments.
- Cover essential building specifications, NBC requirements, and detailed design parameters for inclusive, universally accessible commercial and residential spaces.
- Outline the processes of project estimation, including material specifications, preparing proposals, managing site sourcing, budgeting strategies, and meeting deadlines.
- Examine the principles of waste management hierarchy, strategies for urban environments, and application of sustainable design for efficient waste handling systems.

Learning Outcomes

The students would be able to:

- Analyze urban context, topographical constraints, and microclimates to develop universally accessible movement and access plans for the built site.
- Apply NBC and Master plan standards to specify building requirements for residential and commercial projects, including specialized retail and event spaces.

- Prepare comprehensive project estimates, define material specifications, manage site sourcing/outsourcing, and document financial records for the construction process.
- Design and implement design solutions for waste management, applying the waste hierarchy and urban planning strategies to minimize environmental impact.

THEORY

(Credits 2; Hours 30)

UNIT I: Urban Site Planning and Contextual Design 8 Hours

This unit focuses on analysing the urban environment, understanding site constraints, and integrating design solutions that respond to the wider community and infrastructure.

- Urban Context Analysis: Site Selection Criteria, Microclimate Analysis, Site Zoning, and Land Use.
- Site Design and Constraints: Topographical Planning, Utility Integration, Environmental Constraints.
- Movement and Access Planning: Traffic and Pedestrian Flow, Parking Strategy, Universal Accessibility at the Site Level
- Placemaking and Landscape Architecture: Open Space Design, Landscape Strategy,
- Boundary and Edge Conditions

UNIT II: Building Specifications 7 Hours

This unit focuses on the technical and regulatory aspects of spatial design, covering the development of detailed plans for residential and commercial spaces.

- Building specifications for residential and commercial space design as per NBC, and Master plan
- Specific requirements for designing retail spaces - offices & showrooms
- Space planning for selected events - exhibitions and expos, seminars and conferences areas.
- Design parameters for creating universal spaces with focus on inclusivity (people with special needs, elderly, infants and children).

UNIT III: Project Estimation **8 Hours**

This unit teaches the essential skills for managing the financial and logistical aspects of a design or construction project, ensuring its successful implementation.

- Specifications of materials
- Estimating & budgeting: Types of cost estimations and preparing estimates and budgets
- Proposals & tenders
- Site management - Sourcing/ outsourcing
- Implementation of plan of work and meeting deadlines
- Record keeping & filing

UNIT IV: Waste Management in Urban Spaces **7 Hours**

This unit provides an in-depth look at the principles, strategies, and design applications for managing waste effectively in urban environments.

- Specifications of materials
- Introduction to Waste Management in Urban Environments
- Waste Management Hierarchy and Strategies
- Urban Planning and Waste Management
- Design Applications for Waste Management
- Future Directions and Research

PRACTICAL

(Credits 2; Hours 60)

1. Preliminary Residential Design: Apply building specifications and design principles to create a preliminary architectural design for a residential building.
2. Commercial Space Layout: Design a commercial space (e.g., a retail store, a restaurant, or an office) focusing on specific design requirements and optimizing customer flow.
3. Event Layout Planning: Plan and design the layout for a specific event (e.g., an exhibition, a conference, or a seminar) considering spatial needs and logistics.

4. Small-Scale Cost Estimation: Prepare a detailed cost estimate for a small-scale construction project (e.g., a residential extension or a small commercial building).
5. Project Documentation Development: Develop and maintain all required project documentation for a simulated construction project, ensuring accuracy and completeness.
6. Construction Waste Practice Analysis: Analyze and document the waste management practices currently implemented at a local construction site.
7. Commercial Waste Practice Analysis: Analyze and document the waste management practices currently implemented at a commercial establishment.
8. Sustainable Design Element Creation: Design a sustainable design element to be integrated into either an existing building or a proposed project.
9. Event Waste Minimization Plan: Develop a waste minimization plan specifically tailored for a particular event or planned activity.
10. Activity Waste Minimization Plan: Develop a waste minimization plan for a generic specific activity not related to a construction site or commercial establishment.

Essential Readings

UNIT I:

This unit focuses on analysing the urban environment, understanding site constraints, and integrating design solutions that respond to the wider community and infrastructure.

- DeKay, M., & Brown, G. Z. (2014). *Sun, wind, and light: Architectural design strategies* (3rd ed.). Wiley.
- Gehl, J. (2011). *Life between buildings: Using public space*. Island Press.
- Lynch, K., & Hack, G. (1984). *Site planning* (3rd ed.). MIT Press.
- Waldheim, C. (2016). *Landscape as urbanism: A general theory*. Princeton University Press.

UNIT II:

This unit focuses on the technical and regulatory aspects of spatial design, covering the development of detailed plans for residential and commercial spaces.

- Buxton, P. (Ed.). (2021). *Metric handbook: Planning and design data* (7th ed.). Routledge.
- Bureau of Indian Standards. (2016). *National building code of India 2016* (Part 3 & 4).
- Central Public Works Department. (2016). *Harmonised guidelines and space standards on barrier free built environment for persons with disability and elderly persons*. Ministry of Urban Development, Government of India.
- Delhi Development Authority. (2021). *Master plan for Delhi - 2041*.
- Ministry of Urban Development. (2014). *Urban and regional development plans formulation and implementation (URDPFI) guidelines* (Vol. 1). Government of India.
- Uzodimma, C., & Nwanegbo, G. T. (2023). Space efficiency and circulation: Parameters for a functional convention centre in international markets. *International Journal of Innovative Environmental Studies Research*, *11*(3), 23–27

UNIT III:

This unit teaches the essential skills for managing the financial and logistical aspects of a design or construction project, ensuring its successful implementation.

- Duggal, S. K. (2017). *Building materials* (5th ed.). New Age International.
- Gupta, M. K. (2024). *Practical handbook on building construction* (Reprint 2025). Khanna Publishers.

- *Note: In APA 7, use the actual publication year (2024) even if the marketing/reprint refers to 2025.*
- Lewis, H. (2020). *Bids, tenders & proposals: Winning business through best practice* (6th ed.). Kogan Page.
- Rowlinson, S. (Ed.). (2019). *The Routledge handbook of construction project procurement and delivery*. Routledge.
- Royal Institute of British Architects. (2020). *RIBA plan of work 2020 overview*. RIBA Publishing. https://www.architecture.com/knowledge-and-resources/resources-landing-page/riba-plan-of-work

UNIT IV:

This unit provides an in-depth look at the principles, strategies, and design applications for managing waste effectively in urban environments.

- Anagnostopoulos, C., Zaslavsky, A., & Medvedev, A. (2017). Waste management in the smart city: Current practices and future directions. *Smart Cities, 1*(1), 1–15. https://doi.org/10.3390/smartcities1010001.
- Connett, P. (2013). *The zero waste solution: Untrashing the planet one community at a time*. Chelsea Green Publishing.
- Ghosn, R., & Jazairy, E. H. (2015). *Geographies of trash.* Actar.
- Kumar, S. (Ed.). (2016). *Municipal solid waste management in developing countries*. CRC Press.
- Ministry of Environment, Forest and Climate Change. (2016). *Solid waste management rules, 2016*. Government of India.
- Webster, K. (2017). *The circular economy: A wealth of flows* (2nd ed.). Ellen MacArthur Foundation Publishing.

Suggested Readings

- Meredith, J. R., & Shafer, S. M. (2020). *Project management in practice* (7th ed.). Wiley.
- Mislick, G. K., & Nussbaum, D. A. (2015). *Cost estimation: Methods and tools*. John Wiley & Sons.
- DeChiara, J., Panero, J. & Zelnik, M. (2011). Time Saver Standards for Building types, second edition. McGraw-Hill Education

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

Annexure-13

UNIVERSITY OF DELHI

University of Delhi

Faculty of Science

Department of Home Science

1-Year M.Sc. Food and Nutrition Research Track

Course Credit Structure and Curriculum - NEP 2025

1-Year M.Sc (FOOD AND NUTRITION)

Introduction:

The Department of Home Science offers a 1- year M.Sc. Food and Nutrition, to the 4 -year graduates of B.Sc Home Science, Food and Nutrition specialisation, of University of Delhi. The programme covers key advanced aspects in three areas of specialization namely, Clinical Nutrition, Public Health Nutrition and Food Science and Processing. The programme endeavours to train a cadre of professionals who can create nutrition awareness for promotion of healthy lifestyle among the population. The courses of this programme have been designed to enhance the core competency of students in the fields of public health nutrition, dietetics and food science. The curriculum provides a strong theoretical base and also includes experiential learning through field placements and practical.

In addition to strengthening the advanced knowledge base, the programme aims to strengthen the research acumen of students who have developed a strong base in Food, Nutrition and Dietetics, to enable them to develop into academicians and researchers in the field of food science, nutrition and dietetics.

Programme Specific Objectives:

The objectives of M.Sc. Food and Nutrition programme are:

- To apply the understanding of the concepts of biochemistry, food chemistry, food microbiology, methods of assessing human nutritional requirements, nutritional assessment and diet planning in laboratory setting as per standard methods in the above-mentioned areas
- To understand the applications of nutritional sciences in clinical interventions communication for health promotion, food service management, food science and processing
- To improve understanding and develop skills to participate in planning, management and monitoring of public health nutrition programmes implemented by the government.
- To acquire skills to undertake systematic research in the area of food science, clinical nutrition and public health nutrition

Programme Specific Outcomes:

After completing this programme the student will be able to:

- Assess nutritional status and plan appropriate diets.
- Use the knowledge of nutritional sciences in clinical interventions and communication for health promotion
- Work as food scientists, quality assurance managers and analysts.
- Manage a food service establishment and its Research and Development
- Apply theoretical concepts and practical training for research in the field of food science, clinical nutrition and public health nutrition

Program Structure 3: M.Sc. Only Research

Semester	Core Courses		Elective Courses		Research Methodology		Research/Project		Total Credits
	No. of Courses	Total Credits	No. of Courses	Total Credits	No. of Courses	Total Credits	No. of Courses	Total Credits	
I	1	4	1	4	2	4	1	10	22
II	-	-	1	4	1	2	1	16	22
Total Credits for the Course	4		8		6		26		44

List of Courses to be offered to students opting for Structure-3 (Research) of M.Sc. in 1st and 2nd Semester of One- year course

Type of Course	Course No.	Semester	Course Title	Credits for each Course			
				Theory	Tutorial	Practical	Total
SEMESTER I							
Discipline Specific Core Course	DSC 1	I	Methods of Investigation in Food and Nutrition Research	2	0	2	4
Discipline Specific Elective Course	DSE 1	I	Institutional Food Service management Social and Cultural Aspects in Public Health Improving Maternal, Infant, Young Child and Adolescent Nutrition Animal Products Processing and Unit Operations in Food Processing Exercise, Nutrition and Metabolism Sport-Specific Nutrition	As per the specific course			4
Advanced Research Methodology	ARM 1	I	Advanced Research Methodology	2	0	0	2
Tools for Research	TR 1	I	Tools for Research	2	0	0	2
Dissertation Project/ Entrepreneurship	IP 1	I	Dissertation/Academic project/ Entrepreneurship	0	0	10	10
SEMESTER II							
Discipline Specific Elective Course	DSE 2	II	Precision Nutrition Challenges in Clinical Nutrition Nutritional Care of the Elderly Programme Planning in Public Plant Products Processing and Preservation Food Processing Technologies Clinical Sports Nutrition	As per the specific course			4

			Doping, Supplements and Ergogenic Aids				
Techniques of Research Writing	TRW 1	II	Techniques of Research Writing	2	0	0	2
Dissertation Project/ Entrepreneurship	IP 2	II	Dissertation/Academic Project/ Entrepreneurship	0	0	16	16

List of PGCF courses of M.Sc. Food and Nutrition (Research) (Semester I and II of the One-year programme)

Pool of Discipline Specific Elective Courses offered in Semester I				
	Credits for each Course			
	Theory	Tutorial	Practical	Total
i. Statistics and Data Management (From the common Home Science pool)	3	0	1	4
ii. Medical Nutrition Therapy	3	0	1	4
iii. Institutional Food Service management	2	0	2	4
iv. Social and Cultural Aspects in Public Health Nutrition	3	0	1	4
v. Improving Maternal, Infant, Young Child and Adolescent Nutrition	2	0	2	4
vi. Animal Products Processing and Preservation	3	0	1	4
vii. Unit Operations in Food Processing	2	0	2	4
viii. Exercise, Nutrition and Metabolism	3	0	1	4
ix. Sport-Specific Nutrition	2	0	2	4
Pool of Discipline Specific Elective Courses offered in Semester II				
	Credits for each Course			
	Theory	Tutorial	Practical	Total
x. Precision Nutrition	3	0	1	4
xi. Challenges in Clinical Nutrition	2	0	2	4
xii. Nutritional Care of the Elderly	3	0	1	4
xiii. Programme Planning in Public Health Nutrition	2	0	2	4
xiv. Plant Products Processing and Preservation	3	0	1	4
xv. Food Processing Technologies	2	0	2	4
xvi. Clinical Sports Nutrition	2	0	2	4
xvii. Doping, Supplements and Ergogenic Aids	3	0	1	4

SEMESTER -I

DISCIPLINE SPECIFIC CORE COURSE
METHODS OF INVESTIGATION IN FOOD AND NUTRITION RESEARCH

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Methods of Investigation in Food and Nutrition Research	**4**	**2**	**0**	**2**	**Nil**	**Nil**

Learning Objectives:

- To describe major emerging trends in food and nutrition research and explain their relevance to global health and food systems.
- To develop conceptual and practical knowledge of analytical techniques and their applications.
- To acquire a basic understanding of advanced techniques for structural and functional analysis of biomolecules.
- To understand basic epidemiological concepts and principles, and their application in nutritional epidemiology.
- To appreciate the role of dietary exposure assessment and nutrition-related health outcomes in establishing diet–disease relationships.

Learning Outcomes:

The students would be able to:

- Summarize key current directions in nutrition research and relate them to public health priorities and sustainable diets.
- Understand the principles of analytical techniques and apply them for separation, purification, and characterization of biomolecules in food and nutrition analysis.
- Interpret data from these methods, execute core laboratory procedures, and demonstrate analytical skills for biochemical research.
- Explain key concepts and principles of nutritional epidemiology and apply them to understand diet–disease relationships.
- Assess and interpret dietary exposures and nutrition-related health outcomes using appropriate epidemiological methods.

THEORY

(Credits 2; Hours 30)

UNIT I: Emerging Areas of Nutrition Research 4 Hours

This unit explores emerging frontiers in nutrition research, focusing on innovative methodologies. It addresses global health challenges through advanced nutritional science.

- Precision Nutrition
- Microbiome research
- Big data and machine learning in research
- Sustainability and food systems research

UNIT II: Methods of Analysis of Biomolecules 13 Hours

This unit examines the principles and applications of instrumental methods for the separation and characterization of food analytes in food and nutrition research.

- Spectroscopy & Separation Techniques:
    - UV-Vis Spectrophotometry, Atomic Absorption Spectroscopy
    - Centrifugation: Principle, types (differential, density gradient)
    - Chromatography: Gel Filtration chromatography, Ion Exchange Chromatography, HPLC
- Overview of Advanced Separation & Structural Analysis Techniques:
    - Electrophoresis: SDS-PAGE & 2D gel-electrophoresis
    - Mass Spectrometry: MALDI-TOF
    - Differential Scanning Calorimetry (DSC), X-ray Diffraction (XRD)

UNIT III: Nutritional Epidemiology: Concept, Methods and Applications 8 Hours

This unit introduces the principles of epidemiology and their application in the context of nutrition and potential errors in measurement of diet–disease relationships.

- Definition, purpose and measurements in epidemiology
- Epidemiologic study methods: design, steps, analysis and interpretation.
- Introduction to nutritional epidemiology: Definition and significance in public health nutrition, dietary variation and measurement of diet–disease relationship
- Potential errors in epidemiologic studies

UNIT IV: Exposures in Nutritional Epidemiology 5 Hours

This unit deals with various important exposures in nutritional epidemiology and review of their measurement method(s).

- Nutritional exposures: Relevant direct and indirect measures of nutritional assessment
    - Critical review of diet assessment methods: strengths and limitations, measurement errors, reproducibility and validity, analysis and interpretation.
    - Critical review of anthropometric and various direct measures of nutritional status: clinical, biochemical (nutritional biomarkers), biophysical and measures of body composition. Sources of errors, strengths and limitations of various measures. Relevance and use of various indices and indicators of nutritional status

PRACTICAL

(Credits 2; Hours 60)

1. Preparation of Acidic and Basic buffers.
2. Protein estimation using UV-/Biuret method.
3. Demonstration of HPLC.
4. Demonstration of Gel filtration/Ion-exchange chromatography.
5. Demonstration of SDS-PAGE.
6. Critically review original research on studies in the field of nutritional epidemiology and do the following:
    - Identify research designs used, sampling, analyses and interpretation.
    - Identify applications of research evidence in the field of public health nutrition
7. Determine reliability and validity of an assessment tool
8. Estimate measurement error in anthropometric data
9. Interpret anthropometric data available from national and regional surveys

Essential Readings:

UNIT I

- Gropper, S. S., Smith, J. L., & Carr, T. P. (2021). *Advanced nutrition and human metabolism* (8th ed.). Cengage Learning.
- Heber, D., Shiao, Y.-H., & Asset, E. (Eds.). (2023). *Precision nutrition*. Elsevier. https://doi.org/10.1016/B978-0-443-15315-0.00001-8
- Shils, M. E., Shike, M., & Ross, A. C. (Eds.). (2020). *Modern nutrition in health and disease* (12th ed.). Wolters Kluwer.

UNIT II

- Boyer, R. F. (2012). Biochemistry laboratory: Modern theory and techniques (6th ed.). Prentice Hall.
- Freifelder, D. (1982). Physical biochemistry: Applications to biochemistry and molecular biology (2nd ed.). W. H. Freeman.
- Katoch, R. (2011). Analytical techniques in biochemistry and molecular biology. Springer.
- Kemp, W. (2022). Organic spectroscopy. Bloomsbury Publishing India.
- Mohan, J. (2009). Organic spectroscopy: Principles and applications. Narosa Publishing House.
- Wilson, K., & Walker, J. (2010). Principles and techniques of biochemistry and molecular biology (7th ed.). Cambridge University Press.

UNIT III

- Bonita, R., Beaglehole, R., & Kjellström, T. (2006). Basic epidemiology (2nd ed.). World Health Organization. http://whqlibdoc.who.int/publications/2006/9241547073_eng.pdf
- Boyle, M. A. (2022). Community nutrition in action (8th ed.). Cengage Learning.
- Edelstein, S. (2023). Community and public health nutrition (5th ed.). Jones & Bartlett Learning.
- Park, K. (2025). Park's textbook of preventive and social medicine (28th ed.). Banarsidas Bhanot.
- Vir, S. C. (2021). Public health nutrition in developing countries (Vol. 2, 2nd ed.). Woodhead Publishing India.
- Willett, W. C. (2013). Nutritional epidemiology (3rd ed.). Oxford University Press.

UNIT IV

- Buttriss, J. L., Welch, A. A., Kearney, J. M., & Lanham-New, S. A. (Eds.). (2017). Public health nutrition (2nd ed.). Wiley-Blackwell.
- Gibson, R. S. (2005). Principles of nutritional assessment (2nd ed.). Oxford University Press.

Suggested Readings:

- 1,000 Days. (n.d.). The International Coalition for Advocacy on Nutrition (ICAN). https://thousanddays.org/ican/
- Alive & Thrive. (n.d.). How to: A guide to effective nutrition advocacy. https://www.aliveandthrive.org/en/resources/guidance-on-effective-nutrition-advocacy
- Aschengrau, A., & Seage, G. R. (2014). Essentials of epidemiology in public health (3rd ed.). Jones & Bartlett.
- Cooper, T. G. (2011). The tools of biochemistry (2nd ed.). Wiley-Interscience.
- Dietary Guidelines for Indians. (2024). Dietary guidelines for Indians. National Institute of Nutrition, Indian Council of Medical Research, Government of India. https://www.nin.res.in/dietaryguidelines/pdfjs/locale/DGI07052024P.pdf
- Gibney, M. J., Margetts, B. M., Kearney, J. M., & Arab, L. (Eds.). (2004). Public health nutrition. Blackwell Publishing.
- Gibson, R. S. (2005). Principles of nutritional assessment (2nd ed.). Oxford University Press.
- Gordis, L. (2013). Epidemiology (5th ed.). Saunders Elsevier.
- Harvard T. H. Chan School of Public Health. (n.d.). Precision nutrition. The Nutrition Source. https://nutritionsource.hsph.harvard.edu/precision-nutrition/
- International Institute for Population Sciences, National Programme for Health Care of Elderly, Ministry of Health and Family Welfare, Harvard T. H. Chan School of Public Health, & University of Southern California. (2020). Longitudinal Ageing Study in India (LASI) Wave 1, 2017–18: India report. International Institute for Population Sciences.
- Langseth, L. (1996). Nutritional epidemiology: Possibilities and limitations. ILSI Press.
- Longvah, T., Ananthan, R., Bhaskarachary, K., & Venkaiah, K. (2017). Indian food composition tables. National Institute of Nutrition, Indian Council of Medical Research.
- Ministry of Women and Child Development. (2018). Transforming nutrition in India: POSHAN Abhiyaan—A progress report (December 2018). Government of India. https://www.niti.gov.in/sites/default/files/2020-02/POSHAN_Abhiyaan_first_progress_report_6_Feb_2019.pdf
- Moon, G., & Gould, M. (2000). Epidemiology: An introduction. Open University Press.
- Nutrients. (n.d.). Nutrients. MDPI. https://www.mdpi.com/journal/nutrients
- Plummer, D. T. (2015). An introduction to practical biochemistry (3rd ed.). Tata McGraw-Hill.
- World Health Organization. (n.d.). Nutrition Landscape Information System (NLiS). https://www.who.int/teams/nutrition-and-food-safety/databases/nutrition-landscape-information-system

- Zeigler, C., & Piwoz, E. (2022). Prospects and pitfalls of machine learning in nutritional epidemiology. Nutrients, 14(9), 1795. https://doi.org/10.3390/nu14091795

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
STATISTICS AND DATA MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Statistics and Data Management	4	3	0	1		Nil

Learning Objectives

- To develop understanding of fundamental and advanced statistical concepts used in research and data analysis.
- To enable students to apply descriptive and inferential statistics for real-world decision-making.
- To strengthen ability to formulate hypotheses, select appropriate statistical tests, and interpret outputs.
- To prepare students for quantitative research, industry analytics, and academic data projects.
- To train students in using Excel and SPSS for data handling, visualization, and interpretation.

Learning Outcomes

The students would be able to:

- Explain key concepts in descriptive and inferential statistics.
- Organize, clean, and summarize datasets using appropriate statistical tools.
- Apply probability distributions, correlation, regression, and hypothesis testing.
- Use Excel and SPSS for data visualization, statistical testing, and reporting.
- Interpret statistical outputs and draw valid conclusions for research decisions.
- Design and execute quantitative data analysis workflows independently.

THEORY

(Credits 3; Hours 45)

UNIT I: Introduction and descriptive Statistics **12 Hours**

This unit will introduce the foundations of statistics and techniques for summarizing and describing data.

- Definition, scope, and applications of statistics
- Types of data: qualitative and quantitative
- Scales of measurement
- Classification & tabulation of data
- Graphical and visual representations
- Measures of central tendency: mean, median, mode
- Measures of dispersion: range, variance, standard deviation, coefficient of variation
- Skewness and kurtosis: meaning and interpretation

UNIT II: Probability and Probability Distributions **10 Hours**

This unit explores probability concepts and major statistical distributions.

- Basic probability concepts: Addition & multiplication theorems
- Random variables: discrete and continuous variable
- Binomial, Poisson and Normal distributions
- Sampling theory & sampling distributions
- Central Limit Theorem

UNIT III: Correlation and regression **8 Hours**

This unit focuses on analysing relationships between variables.

- Correlation: Pearson and Spearman correlation
- Simple linear regression: model, estimation, interpretation
- Multiple linear regression: assumptions, multicollinearity, model building

UNIT IV: Hypothesis Testing and Non-Parametric Methods **15 Hours**

This unit introduces hypothesis testing frameworks and non-parametric alternatives for non-normal data.

- Concept of hypothesis: null & alternative
- Types of errors, significance levels, p-value
- Parametric tests:
    - z-test
    - t-test (one sample, independent, paired)
    - ANOVA- One way
    - Chi-square test
- Non-parametric tests:
    - Mann–Whitney U test
    - Wilcoxon signed-rank test
    - Kruskal–Wallis test

- Interpretation and reporting of statistical results
- Research Conclusion and recommendation

Practical

(Credits 1; 30 hours)

1. Data Entry, Coding & Cleaning: Importing data, handling missing values, variable labels, Excel formulas.
2. Descriptive Statistics & Visualization: Mean, Standard Deviation, frequency tables, histograms, boxplots (Excel + SPSS).
3. Cross-Tabulation & Chi-Square Test: PivotTables in Excel; Crosstabs in SPSS.
4. Correlation Analysis: Pearson & Spearman correlations; scatterplots.
5. Simple Linear Regression: Trendline in Excel; Regression output in SPSS.
6. Multiple Regression: Model summary, coefficients, interpretation using SPSS.
7. t-Tests: Independent, paired, and one-sample t-tests in SPSS.
8. ANOVA (One-way & Two-way): Running ANOVA and post-hoc analysis.
9. Non-Parametric Tests: Mann-Whitney, Wilcoxon, Kruskal–Wallis in SPSS.
10. Report Generation & Interpretation
11. Preparing APA-style tables, graphs, and interpretations in Excel/SPSS.

Essential Readings:

UNIT I

This unit describes the foundations of statistics and techniques for summarizing and describing data.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.). Pearson Prentice Hall.
- Bernard, H. R. (2000). *Social research methods: Qualitative and quantitative approaches*. Sage.
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.). CreateSpace Independent Publishing Platform.
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*. Wiley.

UNIT II

This unit deals with the probability concepts, rules of probability, discrete and continuous distributions (Binomial, Poisson, Normal).

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).

- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*.

UNIT III

This unit focuses on relationship between variables, correlation coefficients, simple and multiple regression, regression assumptions.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Muijs, D. (2004). *Doing quantitative research in education with SPSS*. Sage.

UNIT IV

The UNIT deals with statistical inference such as t-tests, ANOVA, Chi-square, non-parametric tests (Mann-Whitney, Wilcoxon, Kruskal-Wallis), decision making.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*.
- Muijs, D. (2004). *Doing quantitative research in education with SPSS*.

Suggested Readings

- Field, A. (2025). *Discovering Statistics Using IBM SPSS Statistics* (6th ed.). Sage.
- Kalyanaraman, K., Ramanathan, H. N., & Harikumar, P. N. (2025). *Statistical Methods for Research: A Step-by-Step Approach Using IBM SPSS*. Atlantic Publishers.
- Healey, J. F., & Donoghue, C. (2021). *Statistics: A Tool for Social Research and Data Analysis* (11th ed.).

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

MEDICAL NUTRITION THERAPY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Medical Nutrition Therapy	4	3	0	1		Nil

Learning Objectives

- To understand the nutrition support for hospitalized patients.
- To examine the etiology, pathophysiology and metabolic alterations associated with various disorders/diseases and to provide appropriate nutrition care and medical nutrition therapy (MNT).
- To develop essential skills in dietary counseling for the effective management of diverse disease conditions.

Learning Outcomes

The students would be able to:

- Develop an understanding about the basic principles of providing nutrition support to hospitalized patients
- Attain comprehensive knowledge of the etiolgy, pathophysiology, metabolic anomalies, and corresponding medical nutrition therapy for a wide range of disorders/diseases.
- Apply fundamental principles of dietary counseling to support nutrition management across various disease conditions.

THEORY

(Credits 3; Hours 45)

UNIT I: Nutrition support system **7 Hours**

This unit will highlight the basic principles, indications, contraindications, access routes, nutrient

composition, complications and guidelines on enteral and parenteral nutrition.

- Enteral and Parenteral Nutrition
- International and National Guidelines on Enteral and Parenteral Nutrition

UNIT II: MNT for Hepatic Disorders 7 Hours

Students will understand the etiopathophysiology, metabolic & clinical aberrations, diagnosis, complications, treatment, MNT and recent advances in disorders and also be trained on disease specific dietary counseling.

- End stage liver disease (ESLD)
- Hepatic Encephalopathy
- Liver resection and transplant

UNIT III: MNT for Cardiovascular Disorders 11 Hours

This unit explains the etiopathophysiology, metabolic & clinical aberrations, diagnosis, complications, treatment, MNT and recent advances in different diseases/disorders. Students will also be trained on disease specific dietary counseling.

- Ischemic Heart Disease (compensated and decompensated)
- Rheumatic Heart Disease
- Coronary artery bypass graft (CABG), angioplasty
- Cerebrovascular and peripheral vascular disease
- Heart transplant

UNIT IV: MNT for Renal Disorders 20 Hours

This unit will provide an understanding of etiopathophysiology, metabolic & clinical aberrations, diagnosis, complications and recent advances in prevention, treatment, MNT and dietary Counselling in kidney disorders.

- Nephrotic Syndrome
- Glomerulonephritis
- Acute Renal Failure
- Chronic Kidney Disease
- End Stage Renal Disease (ESRD)
- Dialysis, Transplant, Renal Stones

PRACTICAL
(Credits 1; Hours 30)

1. Market Survey for commercial nutritional therapeutic products
2. Planning & preparation of diets for the following conditions:
   - Hepatic Encephalopathy
   - Liver Transpalant

- Ischemic Heart Disease
- Nephritis
- Acute Renal Failure
- Chronic renal failure
- Patients on dialysis

Essential Readings

UNIT 1

Students will be introduced to the access routes, indications, contraindications, nutrient composition, complications and guidelines on enteral and parenteral nutrition.

- Indian Dietetics Association, (2018). Clinical Dietetics Manual, 2nd ed. Elite Publishing House Pvt. Ltd. (ISBN: 9788193599648)
- Joshi Y K. (2008). Basics of Clinical Nutrition 2nd ed. Jaypee Brothers Medical Publishers. (ISBN: 978-9350251768)
- Mahan, L.K. and Escott-Stump, S. (2021). Krause's Food Nutrition and Nutrition Care Process, 16th Edition, Elsevier Pvt. Ltd. (ISBN: 032381025X)

- ESPEN guidelines: https://www.espen.org/guidelines/espen-practical-guidelines-pdf-versions
- ASPEN guidelines: https://nutritioncare.org/clinical-resources/guidelines-standards/

UNIT II

Students will learn about etiology, metabolic and clinical abnormalities, diagnosis, complications, treatment, MNT, new advancements and counseling in liver disease.

- Indian Dietetics Association, (2018). Clinical Dietetics Manual, 2nd ed. Elite Publishing House Pvt. Ltd. (ISBN: 9788193599648)
- Joshi Y K. (2008). Basics of Clinical Nutrition 2nd ed. Jaypee Brothers Medical Publishers. (ISBN: 978-9350251768)
- Khanna K, Gupta S, Seth R, Passi SJ, Seth R, Mahna R, Puri S (2013). Textbook of Nutrition and Dietetics.2nd Edn. Phoenix Publishing House Pvt. Ltd.
- Mahan, L.K. and Escott-Stump, S. (2021). Krause's Food Nutrition and Nutrition Care Process, 16th Edition, Elsevier Pvt. Ltd. (ISBN: 032381025X)
- Seth, V. and Singh K. (eds.) (2024). Principles of Medical Nutrition Therapy for Positive Clinical Outcomes, 2nd Edition. Elite Publishing House Pvt. Ltd.
- Role of Nutrition in the Management of Hepatic Encephalopathy in End-Stage Liver Failure: https://pmc.ncbi.nlm.nih.gov/articles/PMC3017957/
- ESPEN Guidelines on clinical nutrition in liver disease: https://www.espen.org/files/ESPEN-Guidelines/ESPEN_practical_guideline_Clinical_nutrition_in_liver_disease.pdf

- Indian standard treatment guidelines organ transplant: Liver: https://clinicalestablishments.mohfw.gov.in/sites/default/files/standard-treatment-guidelines/1511.pdf

UNIT III

This unit covers the etiopathophysiology, metabolic and clinical abnormalities, diagnosis, consequences, treatment, MNT, and current developments and counseling in cardiovascular disease.

- British Nutrition Foundation (Ed.), Stanner, S. (Ed.), Coe, S. (Ed.), & Frayn, K. N. (Managing Ed.). (2019). Cardiovascular disease: Diet, nutrition and emerging risk factors (2nd ed.). Wiley-Blackwell. (ISBN: 978-1-118-82991-2)
- Indian Dietetics Association, (2018). Clinical Dietetics Manual, 2nd ed. Elite Publishing House Pvt. Ltd. (ISBN: 9788193599648)
- Joshi Y K. (2008). Basics of Clinical Nutrition 2nd ed. Jaypee Brothers Medical Publishers. (ISBN: 978-9350251768)
- Khanna K, Gupta S, Seth R, Passi SJ, Seth R, Mahna R, Puri S (2013). Textbook of Nutrition and Dietetics.2nd Edn. Phoenix Publishing House Pvt. Ltd.
- Mahan, L.K. and Escott-Stump, S. (2021): Krause‘s Food Nutrition and Nutrition Care Process, 16th Edition, Elsevier Pvt. Ltd. (ISBN: 032381025X)
- Seth, V. and Singh K. (eds.) (2024) Principles of Medical Nutrition Therapy for Positive Clinical Outcomes, 2nd Edition. Elite Publishing House Pvt. Ltd.
- Diet and Cardiovascular Disease: Advances and Challenges in Population-based Studies: https://pmc.ncbi.nlm.nih.gov/articles/PMC5844273/

UNIT IV

Students will learn about etiology, metabolic and clinical abnormalities, diagnosis, complications, treatment, MNT, new advancements and counseling in kidney disease.

- Gonyea, J. E., & Phillips, S. C. (Eds.). (2023). Clinical guide to nutrition care in kidney disease (3rd ed.). Academy of Nutrition and Dietetics. (ISBN-13: 978-0-88091-201-3)
- Indian Dietetics Association, (2018) Clinical Dietetics Manual, 2nd Edition. Elite Publishing House Pvt. Ltd. (ISBN: 9788193599648)
- Joshi Y K. (2008). Basics of Clinical Nutrition 2nd ed. Jaypee Brothers Medical Publishers. (ISBN: 978-9350251768)
- Khanna K, Gupta S, Seth R, Passi SJ, Seth R, Mahna R, Puri S (2013). Textbook of Nutrition and Dietetics.2nd Edn. Phoenix Publishing House Pvt. Ltd.
- Mahan, L.K. and Escott-Stump, S. (2021): Krause‘s Food Nutrition and Nutrition Care Process, 16th Edition, Elsevier Pvt. Ltd. (ISBN 032381025X)
- Seth, V. and Singh K. (eds.) (2024) Principles of Medical Nutrition Therapy for Positive Clinical Outcomes, 2nd Edition. Elite Publishing House Pvt. Ltd.

- KDIGO 2024 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease: https://kdigo.org/wp-content/uploads/2024/03/KDIGO-2024-CKD-Guideline.pdf

Suggested Readings

- Chowdhary S.R and Aeri B.T. (2023) Textbook of Food Science and Nutrition. Aarahan Publishers. ISBN:978-93-87270-08-4
- Gibney MJ, Elia M, Ljungqvist &Dowsett J. (2005) Clinical Nutrition. The Nutrition Society Textbook Series. Blackwell Publishing Company
- ICMR (2020) Estimated Average Requirements and Recommended Dietary Allowances for Indians. Published by National Institute of Nutrition, Hyderabad.
- Longvah T, Ananthan R, Bhaskarachary K and Venkaiah K (2017). Indian Food Composition Tables. National Institute of Nutrition, ICMR, Hyderabad.
- Puri S, Bhagat A, Aeri, BT, Sharma A (2019). Food Exchange List: A Tool for meal Planning. Elite Publishing House. New Delhi.
- Shils, M.E., Shike, M, Ross, A.C., Caballero B and Cousins RJ (2005) Modern Nutrition in Health and Disease. 10th ed. Lipincott, William and Wilkins.
- Siddhu A, Bhatia N, Singh K, Gupta S (2017). Compilation of food exchange list, technical series 6, Lady Irwin College, University of Delhi. Publ. Global Books Organisation, Delhi
- Williams, S.R. (2001) Basic Nutrition and Diet Therapy. 11th ed. Times Mirror Mosby College Publishing

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

INSTITUTIONAL FOOD SERVICE MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Institutional Food Service Management	**4**	**2**	**0**	**2**		**Nil**

Learning Objectives

- To develop a knowledge base about the facilities required for different types of food service unit
- To equip individuals in understanding and managing resources in a food service institution
- To provide practical skills necessary to manage food service operations in institutional settings

Learning Outcomes

- Gain expertise to function as a food service manager.
- Understand and manage resources in a food service institution.
- Acquire practical experience in managing food service operations for food service UNITs ensuring quality, safety, efficiency and customer satisfaction

THEORY
(Credits 2; Hours 30)

UNIT I: Managing Catering Processes **5 Hours**

In this unit, the students will learn about the management approaches and tools used by managers in food service operations.

- Approaches to management: Classical, Systems approach, Management by Objective, Just-in Time, Total Quality Management
- Tools of Management:
  Tangible Tools: Organization chart, Job description, Job specification, Job analysis, Work schedule, Production schedule, Staff and service analysis statements

Intangible Tools: Communication, Leadership, Decision making

UNIT II: Food Production and Service **12 Hours**

In this unit, the students will learn the components of food production cycle and quality compliance in food service UNITs.

- Food production process
- Meal Ordering Systems (Manual, EMO's)
- Food service in hospitals
- Quality Assurance and accreditation in Food service and health care systems- FSSAI, HACCP, GMP, GHP, NABH, JCI

UNIT III: Management of Resources **10 Hours**

In this unit, students will understand the management of space, equipment, personnel and finances in food service institutions.

- Space and Equipment: Steps in layout planning and architectural features, Feasibility assessment in terms of layout planning
- Personnel: Components of an integrated staffing system, Dealing with employee behaviour, Techniques of motivating employees, Labour Laws
- Managing Finances: Records, Reports, Components of costs and factors affecting costs, Financial accounting, Pricing methods, concept of BEP

UNIT IV: Marketing and Sales Management **3 Hours**

In this unit, the students will understand the marketing principles and strategies relevant to institutional food service.

- Product Differentiation, SWOT Analysis
- Marketing techniques and strategies, Marketing mix
- Sales Management

PRACTICAL
(Credit 2; Hours 60)

1. Market survey of food service organizations **4 Hours**

Market survey of food service organizations to understand the food production and service areas, equipment, labour requirements, marketing and records

2. Planning menus for the following: 20 Hours

- Conference/ Buffet
- Two-day menu for a super specialty hospital
- Three-day menu for a college canteen

3. Quantity cooking: Food stall 28 Hours

- Menu planning
- Standardizing recipes and scaling up to 50/100 portions
- Development of sales promotion tool
- Conduct of project

4. Promoting good hygiene and sanitation practices in a food service UNIT 8 Hours

- Development of tool/aid to promote good hygiene practices
- Training of food service UNIT personnel in development of healthy menus and good hygiene practices
- Conduct of FSSAI checklist in the food service UNIT for good hygiene practices

Essential Readings

UNIT I

- Sethi, M. (2005) Institutional Food Management, New Age International Publishers.
- West, B. and Wood, L. (1988) Food Service in Institutions 6th Edition, John Wiley and Sons.

UNIT II

- Payne- Palacio, J. and Theis, M. (2015) Food service Management: Principles and Practices. 13th ed. Pearson Education.
- Prgomet, M., Li, J., Li, L., Georgiou, A., & Westbrook, J. I. (2019). The impact of electronic meal ordering systems on hospital and patient outcomes: A systematic review. International Journal of Medical Informatics, 129, 275–284.
- Sethi, M. (2005) Institutional Food Management, New Age International Publishers.
- West, B. and Wood, L. (1988) Food Service in Institutions 6th Edition, John Wiley and Sons

UNIT III

- Payne- Palacio, J. and Theis, M. (2015) Food service Management: Principles and Practices. 13th ed. Pearson Education.
- Sethi, M. (2005) Institutional Food Management, New Age International Publishers.
- West, B. and Wood, L. (1988) Food Service in Institutions 6th Edition, John Wiley and Sons
- Desai, V. (2011) The Dynamics of Entrepreneurial Development and Management, Himalya Publishing House Pvt. Ltd., Mumbai.

UNIT IV

- Payne- Palacio, J. and Theis, M. (2015) Food service Management: Principles and Practices. 13th ed. Pearson Education.
- Sethi, M. (2005) Institutional Food Management, New Age International Publishers.
- Desai, V. (2011) The Dynamics of Entrepreneurial Development and Management, Himalya Publishing House Pvt. Ltd., Mumbai.

Suggested Readings

- Knight, J. B. and Kotschevar, L.H. (2000) Quantity Food Production Planning & Management 3rd edition, John Wiley & Sons.
- Kotas, R. and Jayawardardene, C. (1994) Profitable Food and Beverage Management, Hodder & Stoughton Publications.
- Roday, S. (2003) Food Hygiene and Sanitation, Tata McGraw Hill Publication Ltd.
- Taneja, S. and Gupta, S.L. (2001) Entrepreneurship Development. Galgotia Publishing.
- Dessler, G. (2007) Human Resource Management 11th edition Prentice Hall New Jersey.
- Basic Food Safety Training Manual Catering (http://www.fssai.gov.in/home/capacity building/e-library/training-manual.html).
- Street Food Vendor Training on Food Safety and Hygiene (http://www.fssai.gov.in/home/capacity building/e-library/training-manual.html).

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
SOCIAL AND CULTURAL ASPECTS IN PUBLIC HEALTH NUTRITION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Social and Cultural Aspects in Public Health Nutrition	**4**	**3**	**0**	**1**		**Nil**

Learning Objectives

- To explore how socio-cultural factors influence food and nutrition, both historically and in contemporary contexts.
- To examine the social and cultural determinants of food choices and diet-related behaviours.
- To understand the value of cultural knowledge in guiding nutrition practices.

Learning Outcomes

The students would be able to:

- Explain the social and cultural importance of food and its connection to biological aspects of nutrition.
- Analyze historical and current dietary practices and food consumption patterns across cultures.
- Evaluate the impact of social and cultural factors on food choices and dietary behaviours.
- To comprehend the significance of culturally appropriate nutrition interventions.

THEORY
(Credits 3; Hours 45)

UNIT I: Food, Nutrition, and Culture aspects in public health **10 Hours**

This unit deals with the social and cultural significance of food, its integration with biological

aspects of nutrition, It also explores cross-cultural differences and acculturation in food behaviours.

- Ethnological perspectives: social and cultural roles of food
- Integration of biological and socio-cultural aspects of food and nutrition
- Overview of Indian food anthropology

UNIT II: Historical and current Perspectives of culture and food consumption 10 Hours

This unit explores the and historical versus current dietary practices and cultural differences in eating patterns

- Dietary practices and consumption patterns: historical and current perspectives, including health concerns
- Cross-cultural differences in eating behaviour
- Cultural integrity and acculturation in food choices

UNIT III: Food Choices and Diet-Related Behaviour: Social and Cultural Influences 18 Hours

This unit focuses on the influence of the food environment, socio-cultural practices, demographics, and other factors on dietary behaviours. It also includes culture-specific taboos and their role in promoting sustainable, healthy diets.

- Relationship between food environment and dietary practices
- Influence of social structures, demographic factors, cultural values, religious beliefs, and policy on food behaviour
- Culture-specific foods and taboos affecting children, adolescents, pregnant, and lactating women
- Socio-cultural influences on sustainable, healthy diets

UNIT IV: Cultural Knowledge in Nutrition 7 Hours

This unit highlights the role of cultural understanding in shaping food behaviour and delivering culture-specific dietary guidance.

- Influencing changes in food choices and dietary patterns
- Cultural interpretations of malnutrition
- Significance of cultural competence in the practice of public health nutrition - Providing culturally sensitive dietary advice and guidance

PRACTICAL
(Credits 1; Hours 30)

1. Studying staple foods and ethnic cuisines from different regions of India and the world
2. Exploring traditional foods for special occasions across cultures
3. Observing and reporting dietary patterns among individuals of different religions

4. Comparing food habits of migrants with their traditional diets
5. Investigating food waste behaviours across cultures
6. Examining regional diets during pregnancy and infant/child feeding practices
7. Assessing the impact of globalization on food environments and dietary practices

Essential Readings

UNIT I

- Antani, V., Mahapatra, S. (2022). Evolution of Indian cuisine: a socio-historical review. *J. Ethn. Food,* 9, 15. https://doi.org/10.1186/s42779-022-00129-4
- Dufour, D.L., Goodman, A.H. and Pelto, Gretel H. (2012). Nutritional Anthropology: Biocultural Perspectives on Food and Nutrition. 2nd Edition. Oxford University Press.
- Nambiar, V. (2021). Indian Food Anthropology and the Eat Right Movement. Volume I & II. Selective & Scientific Books, New Delhi.

UNIT II

- Dufour, D.L., Goodman, A.H. and Pelto, Gretel H. (2012). Nutritional Anthropology: Biocultural Perspectives on Food and Nutrition. 2nd Edition. Oxford University Press.
- Sanjur, D. (1982). Social and Cultural Perspectives in Nutrition. Prentice Hall.

UNIT III

- Buttriss, J.L., Welch, A. A., Kearney, J.M., Lanham-New, S.A. (Eds.). (2017). Public Health Nutrition (2nd Ed.). Wiley Blackwell.
- Dufour, D.L., Goodman, A.H. and Pelto, Gretel H. (2012). Nutritional Anthropology: Biocultural Perspectives on Food and Nutrition. 2nd Edition. Oxford University Press.
- Edelstein, S. (2023). Community and public health nutrition (5th ed.). Jones & Bartlett Learning.
- McWilliams, M. (2010). Food Around the World: A Cultural Perspective. Second Edition. Pearson Education.

UNIT IV

- Boyle, M. A. (2022). Community Nutrition in Action (8th ed.). Cengage Learning.
- Edelstein, S. (2023). Community and public health nutrition (5th ed.). Jones & Bartlett Learning.
- Sanjur, D. (1982). Social and Cultural Perspectives in Nutrition. Prentice Hall.

Suggested Readings

- Achaya, K.T. (1998). Indian Food. Oxford.
- Farb, P. and G. Armelagos. (1980). Consuming Passions: The Anthropology of Eating. Houghton Mifflin Harcourt.
- Germov, J. & Williams, L. (Eds.). (2009). A Sociology of Food and Nutrition: The Social

Appetite. 3rd Edition. Oxford University Press.
- Gibney, M.J., Margetts, B.M., Kearney, J.K., & Arab, L. (Eds.) (2004). Public Health Nutrition. Wiley-Blackwell.
- Harris, M. (1987). Foodways: historical overview and theoretical prolegomenon. In: Harris, M. and E. B. Ross (eds.) Food and Evolution: Toward a Theory of Human Food Habits. Philadelphia: Temple University Press.
- Higman, B.W. (2011). How Food Made History. 1st Edition. Wiley-Blackwell.
- Le, S. (2018). 100 Million Years of Food: What Our Ancestors Ate and Why It Matters Today. Reprint Edition. Picador.
- McIntosh, Wm. A. (1996). Sociologies of Food and Nutrition. Springer New York.
- Seal, PP. (2023). Food Anthropology in India. Routledge India.
- Sidney, C.H.C. & Tan, C. (2007). Food and Foodways in Asia: Resource, Tradition and Cooking. 1st Edition. Routledge.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

IMPROVING MATERNAL, INFANT, YOUNG CHILD AND ADOLESCENT NUTRITION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Improving Maternal, Infant, Young Child and Adolescent Nutrition	**4**	**2**	**0**	**2**		**Nil**

Learning Objectives

- To understand the nutritional concerns during pregnancy, lactation, infant, young children and adolescence.
- To gain insight into key nutrition challenges and major maternal, child, and adolescent nutrition policies and programs
- To learn the principles of optimal infant and young child feeding practices.
- To develop skills for effective counselling to promote optimal nutrition for mothers, young children, and adolescents.

Learning Outcomes

The students would be able to:

- Explain the nutritional concerns of mothers during pregnancy and lactation, as well as those of infants, young children, and adolescents.
- Describe the principles of optimal infant and young child feeding practices.
- Demonstrate effective counselling skills to support and promote appropriate nutrition practices among mothers, young children, and adolescents.
- Analyse major nutrition concerns affecting maternal, child, and adolescent health.
- Interpret and evaluate key national flagship policies and programs related to maternal, child, and adolescent nutrition.

THEORY
(Credits 2; Hours 30)

UNIT I: Overview and importance of MIYCAN- linkages of MIYCAN with SDGs 4 Hours

This unit lays thrust on importance of the MIYCAN period and its links to national goals and the SDGs.

- Overview and Importance of MIYCAN period
- Linkages between MIYCAN period and National goals and Sustainable Development Goals (SDGs)

UNIT II: Improving Nutrition During Pregnancy and Lactation 10 Hours

This unit deals with maternal nutrition, key concerns, cultural influences, health risks, and management of nutrition-related pregnancy conditions, as well as the impact of diet on fetal growth. It was deals with lactation support, guidelines and programs, community interventions, and essential counselling practices related to maternal nutrition.

- Nutritional needs during pregnancy and lactation- changes in macronutrient and micronutrient needs
- Nutritional concerns in prenatal and postnatal maternal nutrition, Cultural practices influencing maternal nutrition
- Major causes of maternal mortality and morbidity
- Management of common pregnancy-related disorders such as underweight, overweight, nutritional anaemias, pregnancy-induced hypertension, and gestational diabetes
- Relationship between maternal diet and birth outcomes; Impact of nutrient deficiencies on fetal growth and development, Low birth weight, preterm birth, and intrauterine growth restriction (IUGR); Role of maternal nutrition in brain development
- Lactation counselling and support, human milk banking, and strategies to promote effective breastfeeding.
- Guidelines for maternal nutrition- DGI, Nutrition Supplements, etc.; Maternal nutrition services under government programs; Community-based interventions for improving maternal nutrition
- Key nutrition counselling points for maternal nutrition

UNIT III: Infant and Young Child Nutrition 10 Hours

This unit highlights the nutritional needs of infants and young children, patterns of mortality and common illnesses, preventive health measures, optimal feeding practices, and care of small and sick infants including growth monitoring and SAM management. It also covers key policies and programmes supporting child nutrition and essential counselling practices for caregivers.

- Nutritional needs during infancy and young child years- changes in macronutrient and micronutrient needs, significance of 1000 days
- Neonatal, infant, and child mortality patterns; Common childhood illnesses and nutrition-related morbidities; Preventive and promotive health measures (immunization, hygiene, deworming, early stimulation)
- Nurturing Care Framework, Guidelines for optimal infant and young child feeding; Exclusive breastfeeding - benefits, techniques, challenges; Appropriate complementary feeding practices (timing, consistency, frequency, diversity); Responsive feeding and hygiene practices,
- Care of small and sick infants – Kangroo Mother Care, management of diarrhoea and upper respiratory tract infections (ARI). Growth monitoring and identification of malnourished

children including SAM Children. Management of SAM children
- Policies and programmes addressing infant and young child nutrition (e.g., ICDS, HBNC, HBYC, MAA, IMNCI, IDCT etc.)
- Key nutrition counselling points for infant and young child nutrition

UNIT IV: Adolescent Nutrition **6 Hours**

This unit deals with adolescent nutrient needs, major nutrition concerns, their impact on future health, relevant policies and programmes, and key counselling points for healthy development.

- Nutritional needs during adolescent years- changes in macronutrient and micronutrient needs
- Impact of adolescent nutrition on future maternal and adult health; Key concerns like anemia, undernutrition, overweight/obesity, eating behaviours
- Policies and programmes addressing adolescent nutrition (e.g., ICDS, Supplementary nutrition programmes, School meal programmes, RBSK, RKSK)
- Key nutrition counselling points for adolescent nutrition

PRACTICAL
(Credits 2; Hours 60)

1. Gathering and analysing nutrition related indicators for pregnant and lactating women/ infants/ young children/ adolescents
2. Preparation of educational aid on adequate care and nutrition during pregnancy/ nursing mothers/ optimal infant and young child feeding practices/ adolescent girls on importance of adequate nutrition
3. Preparation of educational aid on prevention and management of diarrhoea/ importance and schedule of immunization/ importance of hygiene and sanitation.
4. Planning counselling sessions for nursing mothers for different techniques of breast feeding/ breastfeeding related problems/ expression of breastmilk/ kangaroo mother care etc.
5. Conduct activity to demonstrate age specific complementary food preparation for infants and young children (7 months/ 10 months/1.5 years).
6. Preparation and presentation of information card about various schemes related to maternal, child and adolescent nutrition.
7. Field visit to any ongoing national level programs related to maternal, child, and adolescent nutrition
8. Preparation of case study from field observations related to any one nutrition problem among maternal and child nutrition and health in India.
9. Preparation and presentation of information card about various the national/international organizations working in the field of maternal and child health and nutrition.

Essential Readings
UNIT I

- Park, K. (2025). Park's textbook of preventive and social medicine (28th ed.). Banarsidas

Bhanot Publishers
- Vir, Sheila C (2021). Public Health Nutrition in developing Countries Part 1and 2. Woodhead Publishing India Limited

UNIT II

- Dietary Guidelines for Indians, (2024). National Institute of Nutrition, Indian Council for Medical Research, Government of India. https://www.nin.res.in/dietaryguidelines/pdfjs/locale/DGI07052024P.pdf
- Vir, Sheila C (2024). Child, Adolescent and Women Nutrition in India: Public Policies, Programmes and Progress. New Delhi: Routledge.
- Vir, Sheila C (2021). Public Health Nutrition in developing Countries Part1 and 2. Woodhead Publishing India Limited
- Bamji MS, Krishnaswamy K and Brahmam GNV (Eds) (2016). Textbook of Human Nutrition, 4th edition. Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi.
- World Health Organization (2016). WHO recommendations on antenatal care for a positive pregnancy experience, Geneva, Switzerland.
- Wadhwa A and Sharma S (2003). Nutrition in the Community-A Textbook. Elite PublishingHouse Pvt. Ltd. New Delhi.

UNIT III

- Dietary Guidelines for Indians, (2024). National Institute of Nutrition, Indian Council for Medical Research, Government of India. https://www.nin.res.in/dietaryguidelines/pdfjs/locale/DGI07052024P.pdf
- Vir, Sheila C (2024). Child, Adolescent and Women Nutrition in India: Public Policies, Programmes and Progress. New Delhi: Routledge.
- Vir, Sheila C (2021). Public Health Nutrition in developing Countries Part 1and 2. Woodhead Publishing India Limited
- Guidelines for Enhancing Infant and Young Child Feeding Practices (2013). Ministry of Health and Family Welfare, Government of India.
- Bamji MS, Krishnaswamy K and Brahmam GNV (Eds) (2016). Textbook of Human Nutrition, 4th edition. Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi.
- Wadhwa A and Sharma S (2003). Nutrition in the Community-A Textbook. Elite PublishingHouse Pvt. Ltd. New Delhi.

UNIT IV

- Dietary Guidelines for Indians, (2024). National Institute of Nutrition, Indian Council for Medical Research, Government of India. https://www.nin.res.in/dietaryguidelines/pdfjs/locale/DGI07052024P.pdf
- Vir, Sheila C (2024). Child, Adolescent and Women Nutrition in India: Public Policies, Programmes and Progress. New Delhi: Routledge.
- Vir, Sheila C (2021). Public Health Nutrition in developing Countries Part 1and 2. Woodhead Publishing India Limited
- Bamji MS, Krishnaswamy K and Brahmam GNV (Eds) (2016). Textbook of Human Nutrition, 4th edition. Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi.
- Wadhwa A and Sharma S (2003). Nutrition in the Community-A Textbook. Elite PublishingHouse Pvt. Ltd. New Delhi.

Suggested Readings

- Relevant IEC material from Government of India (including Ministry of Health and Family Welfare, Ministry of Women and Child Development, and other ministries working in nutrition) and Non-Governmental Organizations working in the area of health and nutrition.
- Ministry of Health and Family Welfare (2016). Infant and Young Child Feeding, Training Module for ANMs, Mothers Absolute Affection, National Health Mission, New Delhi.
- Shane A Norris, Edward A Frongillo, Maureen M Black, Yanhui Dong, Caroline Fall, Michelle Lamplet al (2022). Nutrition in adolescent growth and development. The Lancet Vol. 399No. 10320P172-184.
- Dougal Hargreaves, Emily Mates, Purnima Menon, Harold Alderman, Delan Devakumar, Wafai Fawziet al (2022). Strategies and interventions for healthy adolescent growth, nutrition, and development. The Lancet, Vol. 399No. 10320P198-210.
- Victora, Cesar G et al (2021). Revisiting maternal and child undernutrition in low-income and middle-income countries: variable progress towards an unfinished agenda. The Lancet, Volume 397, Issue 10282, 1388 – 1399.
- Heidkamp, Rebecca A et al (2021). Mobilising evidence, data, and resources to achieve global maternal and child undernutrition targets and the Sustainable Development Goals: an agenda for action. The Lancet, Volume 397, Issue 10282, 1400 – 1418.
- Zohra S. Lassi, Rehana A. Salam (2025). Nutrition Across Reproductive, Maternal, Neonatal, Child, and Adolescent Health Care: Focus on Low- and Middle-Income Countries, Springer Nature.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
ANIMAL PRODUCTS PROCESSING AND PRESERVATION

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Prerequisites of the Course (if any)
		Lecture	Tutorial	Practical		
Animal Products Processing and Preservation	**4**	**3**	**0**	**1**		**Nil**

Learning Objectives

- To gain in-depth knowledge of processing aspects involved in milk and milk products, meat, fish, poultry, and eggs.
- The course aims to provide knowledge of the principles and preservation of milk and milk products, meat, fish, poultry, eggs, fruits, and vegetables.

Learning Outcomes

The students would be able to:

- Understand the composition and quality standards of milk, plant produce, and animal-based foods.
- Learn essential processing and preservation methods for dairy, fruits–vegetables, and animal products.
- Develop skills in quality testing of milk, eggs, meat, poultry, fish, and processed items.
- Gain knowledge of manufacturing steps and quality aspects of major dairy and animal products.
- Apply hygiene, sanitation, and basic HACCP principles in food processing operations.

THEORY
(Credits 3; Hours 45)

UNIT I: Milk and Milk Products processing (18 Hours)

This unit deals with the introduction, composition, nutritive value, properties, processing, manufacturing and quality aspects of milk and milk products

- **Introduction to market milk:** Indian standards, Composition, factors affecting composition of milk, physicochemical properties of milk and its constituents, Clean milk practices, buying and collection, platform tests.
- **Milk processing:** Pre-heating, filtration, clarification, standardization, bactofugation, homogenization, pasteurization, cooling, packaging and storage.
- **Milk products (Cream, butter, ice cream, curd, cheese, khoa and ghee)-**Introduction, definition, classification, methods of manufacture, quality aspects.

UNIT II: Technology of Meat and Poultry
(12 Hours)

This unit deals with the composition, nutritive value, classification, pre-slaughter handling, post-mortem changes and preservation of meat and poultry.

- Chemical composition and nutritive value, Types and classification of meat and poultry
- Pre-slaughter handling; ante-mortem and post-mortem inspection; methods of stunning, slaughter, and dressing.
- Post-mortem muscle changes—rigor mortis, factors affecting rigor, thaw rigor, and cold shortening, ageing, curing, smoking, tenderizing, and colour changes in meat.
- Hygiene and sanitation practices in slaughterhouses
- Major preservation methods: chilling, freezing, curing, smoking, dehydration, canning, and irradiation, antibiotic residue concerns, concept of value addition and by-product utilization

UNIT III: Fish processing and products (6 Hours)

This unit deals with the composition, nutritive value, post-harvest changes, spoilage, processing, preservation and utilisation of fish and its products.

- Composition, nutritive value and on-board handling of fish, Post-harvest physiology and spoilage of fish.
- Preservation techniques: Chilling, freezing (IQF, block freezing), curing, drying, smoking, canning, irradiation, Modified Atmosphere Packaging and quality factors.
- Fish processing and value-added products: Surimi, fish mince, fish protein concentrates. Utilization of fish processing by-products.

UNIT IV: Egg processing and products (9 Hours)

This unit deals with the composition, nutritive value, functional properties, quality aspects, processing of fish and its products.

- Nutritive value and functional properties of eggs
- Egg grading and quality standards, quality factors, and storage
- Bacterial infection, pasteurization, freezing, drying, and egg substitutes.

- Processing of egg products: Egg powders, frozen eggs, liquid eggs. Technology of egg foams and factors influencing foaming characteristics.

PRACTICAL
(Credits 1; Hours 30)

List of Experiments

- Determination of Acidity in milk and milk products.
- Platform tests for milk quality: (COB, MBRT, Specific gravity, SNF)
- Estimation of milk fat by the Gerber method.
- Assessment of common adulterants in milk and milk products.
- Preparation and Quality Evaluation of Chicken Sausage.
- Planning of generic HACCP model for poultry.
- Quality evaluation of fish (Fresh vs Stale).
- Detection of meat in Vegan foods
- Cut out analysis of canned fish (Sardine/Mackerel/Tuna) and analysis of external and internal parameters.
- Evaluation of eggs for quality parameters (market eggs, branded eggs)

Essential Readings

UNIT I

- De, S. (2007).Outlines of Dairy Technology.Oxford: Oxford University Press.
- Webb B.H.and Alford (2005). Fundamentals of dairy chemistry. CBS Publisher.
- Potter, N. N., & Hotchkiss, J. H. (2012). Food science. Springer Science & Business Media.
- Srilakshmi, B.(2002). Food science. New Age Publishers
- https://www.scribd.com/document/659871719/Manual-Dairy-03-10-2022

UNIT II

- Hui, Y.H. 2001. Meat Science and Applications. Marcel Dekker.
- Pearson, A.M. & Gillett, T.A. 1996. Processed Meats. 3rd Ed. Chapman & Hall.
- Lawrie, R.A. 2006. Lawrie's Meat Science. 7th Ed. Woodhead Publishing.
- Potter, N. N., & Hotchkiss, J. H. (2012). Food science. Springer Science & Business Media.
- Srilakshmi, B.(2002). Food science. New Age Publishers
- Van Loesecke HW (1998) *Food Technology Series Drying and Dehydration of foods*. Allie Scientific Publishers

UNIT III

- Govindan, T.K. 1985. Fish Processing Technology. Oxford & IBH.
- Sen, D.P. (2005). Advances in Fish Processing Technology. Allied Publishers Pvt.Limited.
- Hall, G.M. (1997). Fish Processing Technology. 2nd edition NY: VCH
- ElShehawy, S. M., & Farag, Z. S. (2019). Safety assessment of some imported canned fish using chemical, microbiological and sensory methods. *Egyptian Journal of Aquatic Research, 45*(4), 389–394.

- Pais-Costa, A. J., Marques, J. C., & Prego, R. (2025). New perspectives on canned fish quality and safety. *Foods*, 14(1), 99
- Potter, N. N., & Hotchkiss, J. H. (2012). Food science. Springer Science & Business Media.
- Srilakshmi, B.(2002). Food science. New Age Publishers

UNIT IV

- Stadelman, W.J. and Cotterill, O.J. 2001. Egg Science and Technology. Haworth Press.
- Potter, N. N., & Hotchkiss, J. H. (2012). Food science. Springer Science & Business Media.
- Srilakshmi, B.(2002). Food science. New Age Publishers

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
UNIT OPERATIONS IN FOOD PROCESSING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Unit Operations in Food Processing	**4**	**2**	**0**	**2**		**Nil**

Learning Objectives

- To impart knowledge about various UNIT operations used in food processing
- To understand the efficiency and suitability of equipment for specific UNIT operations
- To understand the concept of hygienic design, sustainability, and Industry 4.0 elements in process planning

Learning Outcomes

The students would be able to:

- analyse and differentiate various UNIT operations used in food processing
- evaluate the efficiency and suitability of equipment for specific UNIT operations
- apply hygienic design, sustainability, and Industry 4.0 elements in process planning

THEORY
(Credits 2; Hours 30)

UNIT I: Introduction to UNIT Operations **2 Hours**

This unit deals with the introduction and classification of UNIT operations in food processing.

- Definition of UNIT operations,
- Classification of UNIT operations:
  - Preliminary operations (cleaning of raw material, sorting, grading)
  - Conversion operations (size reduction, mixing, filtration, centrifugation, etc.)
  - Preservation operations (heat processing, evaporation, freezing, irradiation, etc.)
  - Ancillary operations (plant hygiene, water supplies, material handling, etc.)

UNIT II: Preliminary Operations **4 Hours**

This unit deals with the cleaning, sorting, grading and peeling of food in industry.

- Cleaning: theory, methods of cleaning – wet and dry and applications
- Sorting and grading: theory, methods (shape and size, weight, color and machine vision sorting and grading systems) and applications, recent developments.
- Peeling: theory, methods and applications

UNIT III: Conversion Operations 12 Hours

This unit deals with the operations like size reduction, mixing , centrifugation, expression, extraction, filtration and membrane separation.

- Size reduction: Theory, Principles of size reduction- energy laws; Equipment of size reduction in solid and liquid food- mechanism and working principle, Effect on foods and microorganism, Developments in size reduction technologies.
- Mixing: Theory, Equipment of mixing in – dry powders, low or medium viscosity liquids, high viscosity liquids and pastes, dispersion of powders in liquids, Effect on foods and microorganism, Developments in mixing technologies.
- Centrifugation: Theory, Equipment for- separation of immiscible liquids, clarification of liquids by removal of small amounts of solids, removal of solids.
- Expression and Extraction: Theory and Equipment
- Filtration and Membrane Separation: Theory, types, membrane fouling, Equipment, applications in food processing.

UNIT IV: Automation, Sustainability and Hygienic Design in UNIT Operations 12 Hours

This unit deals with recent advancements in food processing UNIT operations with emphasis on automation, sustainability and hygienic design

- Food plant design
- Automation in processing lines and equipment control; introduction to PLC, sensors and machine vision in selected UNIT operations (sorting, grading, mixing, membrane processing).
- Industry 4.0 applications: data-driven process monitoring, predictive maintenance and traceability.
- Sustainability considerations in equipment and process selection: energy efficiency, water use reduction and waste minimization strategies.
- Hygienic design principles: sanitary materials of construction, equipment cleanability and advances in CIP/SIP systems.

PRACTICAL
(Credits 2; Hours 60)

- Sorting and grading of food material (grains, spices, fruits and vegetables)

- Screen analysis of food sample
- Freezing time calculation
- Mixing index calculation using solid-solid and liquid-liquid systems
- Estimation of filtration rate
- Study of ultra-filtration process.
- Food plant design
- Study on material handling in food processing industry
- Industrial Visit

Essential Readings

UNIT I

- Fellows, P. J. (2017). Food Processing Technology: Principles and Practice (4th ed.). Woodhead Publishing.
- Barbosa-Cánovas, G. V., Balasubramaniam, V. M., Chorng-Li, T., Pothakamury, U. R., & Swanson, B. G. (2001). Non thermal Processing of Foods. IFT Press/Marcel Dekker.
- Singh, R. P., & Heldman, D. R. (2014). Introduction to Food Engineering (5th ed.). Academic Press.
- Ibarz, A., & Barbosa-Cánovas, G. V. (2014). UNIT Operations in Food Engineering. CRC Press.

UNIT II

- Barbosa-Cánovas, G. V., Balasubramaniam, V. M., Chorng-Li, T., Pothakamury, U. R., & Swanson, B. G. (2001). Non thermal Processing of Foods. IFT Press/Marcel Dekker.
- Fellows, P. J. (2017). Food Processing Technology: Principles and Practice (4th ed.). Woodhead Publishing.
- Ibarz, A., & Barbosa-Cánovas, G. V. (2014). UNIT Operations in Food Engineering. CRC Press.

UNIT III

- Heldman, D. R., & Lund, D. B. (2007). Handbook of Food Engineering (2nd ed.). CRC Press.
- Fellows, P. J. (2017). Food Processing Technology: Principles and Practice (4th ed.). Woodhead Publishing.

UNIT IV

- Sun, D. W. (Ed.). (2016). Emerging Technologies for Food Processing (2nd ed.). Academic Press.
- Singh, R. P., & Heldman, D. R. (2014). Introduction to Food Engineering (5th ed.). Academic Press.

Suggested Readings

- R. Paul Singh and Dennis R. Heldman. 2014. Introduction to Food Engineering, 5th Ed. Elsevier, Amsterdam, The Netherlands.
- Christie John Geankoplis. 2003. Transport Processes and Separation Process Principles (Includes UNIT Operations), 4th Ed. Prentice-Hall, NY, USA.
- Warren L. McCabe, Julian Smith, Peter Harriott. 2004. UNIT Operations of Chemical Engineering, 7th Ed. McGraw-Hill, Inc., NY, USA.
- Toledo R T, 2018. Fundamentals Of Food Process Engineering, Springer, Fourth Edition ISBN: 9783319900971
- Fritz, M., & E. Hertel (2020). "Sustainability and Digitalization in the Food Industry." Journal of Food Engineering Trends.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

EXERCISE, NUTRITION AND METABOLISM

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Exercise, Nutrition and Metabolism	4	3	0	1		Nil

Learning Objectives

- To familiarize students with the concepts of metabolism, energy expenditure and periodisation for fitness and sports
- To enable students to imbibe knowledge and methods for planning daily diets; nutrient intake strategies and hydration for fitness and various types of sports

Learning Outcomes

- The students would be able to understand the role of different nutrients in sports performance and health of a competitive or recreational athlete.
- Students will be able to plan daily diets; nutrient intake strategies and hydration regimens for various types of sports

THEORY
(Credits 3; Hours 45)

UNIT I: Energy and Macronutrient intake for physical fitness and periodised sports training **15 Hours**

This unit focusses on Energy metabolism and macronutrients for physical fitness and sports performance

- **Exercise Energy expenditure:** Concept of metabolism; periodisation in sports; energy systems and energy availability for assessment of energy requirement of athletes and consequences of energy imbalance on performance; commonly reported energy intake patterns of athletes.
- **Carbohydrate Intake and performance:** Carbohydrate and its utilisation in the body; intensity of training impacting carbohydrate utilisation; recommendations of type, timing and quantity of carbohydrate intake in resistance training and endurance training
- **Fat Intake and performance:** Intensity of training impacting fat utilization; recommendations of type, timing and quantity of fat intake in resistance training and endurance training.
- **Protein Intake and performance:** Type and quality of protein and its utilisation in the body; protein turnover and recommendations for protein during endurance versus resistance training; specific role of amino acids for performance; dietary protein strategies for performance enhancement

UNIT II: Micronutrients in exercise performance **15 Hours**

This unit focusses on Energy metabolism and macronutrients for physical fitness and sports performance

- **Vitamins:** Intake of vitamins in exercise performance: through mental ability, immunity and recuperation to an injury; performance benefits of key vitamins; requirements for athletes.
- **Minerals:** Mineral intake and exercise performance: mental ability, immunity and recuperation to an injury; performance benefits of key minerals; requirements for athletes.
- **Antioxidants:** Definition of oxidative stress in exercise and sports; antioxidants; enzymatic and non-enzymatic antioxidants; mode of action; antioxidant effects in reducing exercise related oxidative stress; effect on muscle contraction and exercise performance; antioxidant deficiencies and exercise performance; antioxidant requirements for exercise.

UNIT III: Hydration strategies for athletes **5 Hours**

This unit focuses on dehydration and strategies for hydration for athletes

- **Dehydration:** Causes; symptoms and its effects on cardiovascular system and muscle metabolism; tolerable levels of dehydration; synergistic effect of dehydration and hyperthermia; effects of dehydration on endurance performance; methods for determining degree of dehydration among athletes; strategies for lowering hyperthermia.
- **Hydration strategies:** Beverage composition and formulation (isotonic, hypotonic and hypertonic); only fluid versus fuelling with other macronutrients and electrolytes for

exercise benefits; beverage volume for maintaining euhydration with performance benefits; beverage timing (pre-exercise hydration, during exercise hydration protocol, post-exercise rehydration); factors that influence intake; gastric emptying and absorption of fluids; beverage palatability and fluid intake; intravenous rehydration; food versus fluid consumption during exercise.

UNIT IV: Nutrient periodisation and meal timing for sports **10 Hours**

This unit will strengthen concepts and application of nutrient periodisation, meal timing related to the type of training and exercise of all types, with special focus on endurance events

- **Nutrient periodisation and Meal timing:** Concept and importance of periodisation and meal timing related to the type of training and exercise intensity.
- Effect of energy intake and co-ingestion of carbohydrate and protein before, during and after training.
- Importance of timing of carbohydrate intake; type of carbohydrates and proteins beneficial for maximum refuelling post exercise sessions.
- Gender differences in carbohydrate, protein and fat refuelling strategies.
- Effect of high or low carbohydrate, protein and fat on training adaptation and performance; periodisation of macronutrients based on the phase/season of training and strategies to be followed.

PRACTICAL

(Credits 1; Hours 30)

1. To calculate exercise energy expenditure using the factorial method with activity records and energy cost of sports from the compendium for athletes.
2. Menu planning for food and fluid intake (incorporating traditional Indian food ingredients) for training of:
    - Endurance games
    - Power games in different weight categories
    - Team sports
    - Skilled sports
3. Menu planning for athletes for the following:
    - Pre-competition meal
    - Consumption during-competition
    - Post-competition recovery meal
4. Formulation of sports drinks using traditional Indian food ingredients:

- Isotonic beverages
- Hypotonic / hypertonic beverages

Essential Readings

UNIT I:

- Burke, L., Minehan, M., and Deakin, V. (Eds.). (2021). Clinical Sports Nutrition (Vol.6) McGraw-Hill Education , Australia. ISBN-13:978-1760425647
- Campbell, B. (Ed.). (2013). Sports nutrition: enhancing athletic performance. CRC Press.
- Fink, H. H., & Mikesky, A. E. (2017). Practical applications in sports nutrition. Jones &

  Bartlett Learning.
- The Academy of Nutrition and Dietetics. (2021). *Sports Nutrition for Indians* [PDF]. Available at https://higherlogicdownload.s3.amazonaws.com/THEACADEMY/de8f706f-a2d1-4ee8-8d52-404d56f75b77/UploadedImages/IND/Document/Resources/Sports_Nutrition_for_Indians_2021.pdfILSI- India, NIN, SAI. *Nutrition and hydration Guidelines for excellence in sports performance*; 2007: 48-49.
- Lal P.R. Handbook of Sports Nutrition, Friends' Publications, New Delhi, ISBN-13: 978-8172162818.
- Eberle, S. G. (2013). Endurance Sports Nutrition, 3E. Human Kinetics.

UNIT II:

- Wolinsky, I., & Driskell, J. A. (Eds.). (2005). Sports nutrition: vitamins and trace elements.

  CRC Press.
- Maughan, R.J., & Shirreffs, S.M. (Eds.). (2013). Food, Nutrition and Sports Performance III (1st ed.). Routledge. https://doi.org/10.4324
- Fink, H. H., & Mikesky, A. E. (2017). Practical applications in sports nutrition. Jones &

  Bartlett Learning.
- Amawi, A., AlKasasbeh, W., Jaradat, M., Almasri, A., Alobaidi, S., Hammad, A. A., Bishtawi, T., Fataftah, B., Turk, N., Saoud, H. A., Jarrar, A., & Ghazzawi, H. (2024). Athletes' nutritional demands: a narrative review of nutritional requirements. *Frontiers in nutrition*, *10*, 1331854. https://doi.org/10.3389/fnut.2023.1331854

UNIT III:

- ILSI- India, NIN, SAI. *Nutrition and hydration Guidelines for excellence in sports performance*; 2007: 48-49.
- Lal P.R. Handbook of Sports Nutrition, Friends' Publications, New Delhi, ISBN-13: 978-8172162818.
- The Academy of Nutrition and Dietetics. (2021). Sports Nutrition for Indians [PDF]. Available at https://higherlogicdownload.s3.amazonaws.com/THEACADEMY/de8f706f-a2d1-4ee8-8d52-404d56f75b77/UploadedImages/IND/Document/Resources/Sports_Nutrition_for_Indians_2021.pdf

UNIT IV:

- ILSI- India, NIN, SAI. *Nutrition and hydration Guidelines for excellence in sports performance*; 2007: 48-49.
- Campbell, B. (Ed.). (2013). Sports nutrition: enhancing athletic performance. CRC Press.
- Lal P.R. Handbook of Sports Nutrition, Friends' Publications, New Delhi, ISBN-13: 978-8172162818.
- Eberle, S. G. (2013). Endurance Sports Nutrition, 3E. Human Kinetics.

Suggested Readings

- Marie Dunford. (2017) Nutrition for Sport and Exercise.
- Jeukendrup, A. (2010). Sports Nutrition-From lab to Kitchen. Meyer & Meyer Sport.
- Spano, M., Kruskall, L., & Thomas, D. T. (2017). Nutrition for Sport, Exercise, and Health.
  Human Kinetics.
- Lamprecht, M. (Ed.). (2014). Antioxidants in sport nutrition. CRC Press.
- Valenzuela, P. L. (2023). Recent Advances in Nutrition for Disease Prevention and Sports Performance Enhancement. *Nutrients*, *15*(5), 1170.
- Kloby Nielsen, L. L., Tandrup Lambert, M. N., & Jeppesen, P. B. (2020). The Effect of Ingesting Carbohydrate and Proteins on Athletic Performance: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. *Nutrients*, *12*(5), 1483. https://doi.org/10.3390/nu12051483

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

DISCIPLINE SPECIFIC ELECTIVE (DSE)

SPORT-SPECIFIC NUTRITION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Sport-specific Nutrition	4	2	0	2		NIL

Learning Objectives

- To understand the concept of basing nutritional intake on physiological demands of training for Specific Sports
- To gain expertise in fuel and nutrient support specific to a sporting event during training, pre-competition, during competition and recovery.

Learning Outcomes

- Students will be able to demonstrate comprehension of the principles of basing nutritional intake on physiological demands of training for Specific Sports
- Students will be able to plan fuel and nutrient support during training, pre-competition, during competition and recovery, specific to a sporting event.

THEORY

(Credits 2; Hours 30)

UNIT I: Nutrition for team sports and Ultra-Endurance events 8 Hours

This unit deals with the concept of adaptation of nutrition guidelines for team games (Hockey, Kabaddi and Cricket) and marathon covering the following aspects:

- Playing position and rules of the game; basic physiology of playing team sports; physique mapping for each event (body composition).

- Determining position wise fuel need for training and competition; quantity and timing of nutrient intake; current research on position-specific nutrition needs and fuel utilisation.

- Current literature suggestions on food intake and recovery strategies; supplement usage and dietary periodisation among the athletes; case studies on team sports and marathon

UNIT II: Nutrition for Power and Weight-Category Sports 8 Hours

This unit deals with the concept of adaptation of nutrition guidelines for specific sports requiring adherence to weight categories

- Strength and Combat sports (Sprits, Jumps, Throws, Wrestling, Weightlifting, Judo, Boxing): Game dynamics; fuel utilisation (energy and macronutrients); energy demands of the game; nutrient timing and dietary periodisation

- Weight management issues: Overemphasis on protein requirements; tailored nutrition and hydration guidelines before, during and post-training/competitions; supplement or other ergogenic aids; recovery strategies (dietary and non-dietary components).

UNIT III: Nutrition for Water Sports 6 Hours

This unit deals with the knowledge of various water-sports and the concept of adaptation of nutrition guidelines for water sports (Swimming, Rowing):

- Understanding of Water Sports
- Physiological and biochemical changes in water sports
- Common nutritional problems associated to water sports
- Guidelines specific to nutrition in water sports: Identifying individual energy and other macronutrient requirements; nutrient-timing; dietary periodisation; supplement usage.

UNIT IV: Nutrition for Nutrition for sports requiring Balance and coordination 8 Hours

This unit deals with the concept of adaptation of nutrition guidelines for balance and coordination related sports:

- **Balance related sports (Gymnastics, Golf):** Understanding playing formats and fuel utilisation (energy and macronutrients); different energy demands of balance sport; physique maintenance and weight management issues; nutrient timing and dietary periodisation; tailored nutrition and hydration guidelines before, during and post-training/competitions
- **Coordination sport (Archery, Shooting):** Playing formats and specific demands of the game; eye-hand coordination; current research relating nutrition and coordination sports performance; maintaining proper fuel and hydration in coordination sport; case studies of archers and shooters; identifying the current nutritional problems; dietary guidelines for pre, during and post- training/competitions

PRACTICAL

(Credits 2; Hours 60)

1. Menu planning for food and fluid intake during training and competition including nutrient periodisation for :
    - Hockey players/cricketers.
    - Kabaddi players
    - Sprinters and runners.
    - Tennis/Badminton.
    - Rowing.
    - Shooting/Archery.
    - Marathon
2. Menu planning for food and fluid intake during training and competition including nutrient periodisation and weight-management for:
    - Power sports.
    - Gymnastics.
3. Analysis of food labels of sports products
4. Nutritional evaluation of sports drink

Essential Readings

UNIT I:

- Roberts, J. D., López-Samanes, A., & Trakman, G. (Eds.). (2024). *Nutrition for team and individual sport athletes*. Frontiers Media SA. ISBN 9782832557761.
- Fink, H. H., & Mikesky, A. E. (2017). Practical applications in sports nutrition. Jones & Bartlett Learning.
- Christoph Zinner and Billy Sperlich. (2016). Marathon Running: Physiology, Psychology, Nutrition and Training Aspects

- Ryan, M. (2012). Sports nutrition for endurance athletes. Velo Press.
- Stohs, S. J., & Kitchens, E. K. (Eds.). (2013). *Nutrition and enhanced sports performance: Muscle building, endurance, and strength*. Academic Press. ISBN 9780123964779.

UNIT II:

- Jackson, C. G. R. (Ed.). (2000). *Nutrition and the Strength Athlete*. CRC Press. ISBN: 9780849381980.
- Maughan, R. J. (Ed.). (2008). Nutrition in sport (Vol. 7). John Wiley & Sons.
- Slater, G., & Phillips, S. M. (2011). Nutrition guidelines for strength sports: sprinting, weightlifting, throwing events, and bodybuilding. Journal of sports sciences, 29(sup1), S67-S77.
- Stohs, S. J., & Kitchens, E. K. (Eds.). (2013). *Nutrition and enhanced sports performance: Muscle building, endurance, and strength*. Academic Press. ISBN 9780123964779.

UNIT III:

- González Andrade, C. (2025). *Nutrition and water polo* (PDF eBook). César González Andrade. Publisher date: February 5, 2025. ISBN 9798230233350.
- FINA. (2021). *Nutrition for aquatic athletes* (PDF booklet). Fédération Internationale de Natation (FINA). Available at https://resources.fina.org/fina/document/2021/02/04/5c14b311-7eba-4d2b-9114-acf13d300683/nutrition_for_aquatic_athletes_booklet_v5_final.pdf

UNIT IV:

- Clark, N. (2008). *Sports nutrition guidebook* (4th ed.) [PDF]. Human Kinetics. Available at https://repository.bbg.ac.id/bitstream/1996/1/Sports_Nutrition_Guide.pdf
- Jemni, M. (Ed.). (2018). *The science of gymnastics: Advanced concepts* (2nd ed.). Routledge. ISBN 978-1-138-70192-2.
- Marcolin, G., Matej, S., & Paillard, T. (Eds.). (2022). *Postural balance control in sport and exercise* [PDF]. Frontiers in Physiology. ISBN 978-2-88976-730-4.

Suggested Readings

- Burke, L., Deakin, V., & Minehan, M. (Eds.). (2021). *Clinical sports nutrition* (6th ed.). McGraw-Hill Education.
- Campbell, B. (Ed.). (2013). Sports nutrition: enhancing athletic performance. CRC Press.
- Reaburn, P. R. (Ed.). (2014). Nutrition and Performance in Masters Athletes. CRC Press.
- Powers, S. (2014). Exercise physiology: Theory and application to fitness and performance. McGraw-Hill Higher Education.

- McArdle, W. D., Katch, F. I., & Katch, V. L. (2015). Exercise physiology: nutrition, energy, and human performance. 8th Edition, Lippincott Williams & Wilkins.

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

COURSES IN RESEARCH METHODOLOGY

ADVANCED RESEARCH METHODOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre- requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Advanced Research Methodology	2	2	0	0	As per admission criteria	Should have studied Basic Research Methodology and Statistics

Learning Objectives

- Construct a theoretical framework for diverse research problems.
- Compare and contrast the design elements of experimental, quasi-experimental, and non-experimental studies.
- Formulate appropriate research questions for a mixed-methods design.

Learning Outcomes

After completing the course, students will be able to:

- Design complex research projects, including mixed-methods and longitudinal studies, appropriate for advanced academic inquiry.
- Determine the internal and external validity of research designs.
- Evaluate and justify the selection of advanced sampling techniques.

THEORY
(Credits 2; Hours 30)

UNIT I: Theoretical Foundation of Research Design and Sampling. 12 Hours

This unit covers the theoretical foundation of research designs, issues of internal and external validity, advanced literature review techniques including systematic reviews and meta- analysis, and approaches to theory building through inductive, deductive, and abductive reasoning. The

unit also discusses sophisticated sampling techniques, sample size determination, and sources of sampling error, enabling learners to design rigorous and generalizable research studies.Types of research designs and internal external validity perspectives

- Literature Review Approaches: Systematic Review, Meta Analysis, scoping review and others
- Theory Building and testing in qualitative and quantitative researches
- Sampling Frameworks and strategy, Sample size calculation and error
- Advanced Quantitative Sampling Techniques: Stratified Cluster Sampling, Multi-Stage Sampling, Adaptive Sampling and other techniques.
- Sampling in qualitative research: Techniques and issues of depth, context and data saturation

UNIT II: Quantitative, Qualitative and Mixed Methods Research Design. 18 Hours

This unit focuses on the different types of research designs including, advanced quantitative research designs, key qualitative research methodologies and mixed-methods research designs and strategies for integrating qualitative and quantitative data.

- Quantitative Research Design
  - Advanced Experimental Designs: RCT Designs, Factorial designs, Repeated Measures (within-subjects),
  - Longitudinal Studies: Panel, Cohort, and Trend designs
  - Cross-Sectional: Survey and other quantitative designs.
- Qualitative Methodologies
  - Aspects of robust Qualitative research designs.
  - Iteration, Data Triangulation,Saturation and Reflexivity in qualitative research
  - Ethnographic Research, Case Study Research, Narrative Inquiry
  - Action and Participatory Researches: philosophical and methological perspectives
- Mixed-Methods Design
  - Convergent Parallel, Explanatory Sequential, Exploratory Sequential designs; Notation systems (e.g., QUAL to QUAN)
  - Integration and Mixing: Strategies for data mixing, synthesis, and developing a unified interpretation.

Essential Readings UNIT

I

This unit introduces the perspectives that guide advanced research practices. Students will study different types of research designs, key issues of validity, advanced literature review methods, and approaches to theory development. The unit also covers details of sampling for research. The unit aims to strengthen students' conceptual clarity and ability to link theory, methodology, and research questions in scholarly inquiry.

- Black, J. A., & Champion, D. J. (1976). *Methods and issues in social research*. John Wiley & Sons
- Burns, Robert, B. (2000) *Introduction to Research Methods*(4th ed.,chaps8-10, 20-22, 29,30). Sage Publications
- Kothari, C.R., Garg, Gaurav (2023) *Research Methodology: Methods and Techniques*
- (5th ed.) New Age International Publishers
- Mandlik, D., Kalkar, P., Singh C. (2025) *Advanced Research Methodologies and Practices*. Taylor & Francis.
- Mallik, R., Kurian, M., Prajapati, V., Pithadia, M. (2023) *Advanced Research Methodology*. AG Publishing House
- Neuman, W. Laurence (2008) Social Research Methods: Qualitative and Quantitative Approaches (6th ed., chaps3-5) Pearson Education

UNIT II

This unit focuses on advanced quantitative research designs including experimental, longitudinal, and cross-sectional designs. Emphasis is placed on understanding complex experimental structures and multivariate approaches. Through this unit, students will also develop an understanding of advanced qualitative research approaches such as ethnographic, case study, narrative, and participatory research designs, focusing on their key features and applications. The unit will further discuss mixed-methods research designs that integrate quantitative and qualitative approaches. Students will examine different mixed-methods designs and strategies for integrating data during analysis and interpretation.

- Baumeister, M., Kropf, S., & Pöpper, C. (2022). Quantile-based MANOVA: A new tool for inferring multivariate data in factorial designs. *arXiv preprint arXiv:2211.15484*. https://doi.org/10.48550/arXiv.2211.15484
- Black, J. A., & Champion, D. J. (1976). *Methods and issues in social research*. John Wiley & Sons
- Burns, Robert, B. (2000) *Introduction to Research Methods*(4th ed.,chaps8-10, 20-22, 29,30). Sage Publications
- Caruana, E. J., Roman, M., Hernández-Sánchez, J., & Solli, P. (2015). Longitudinal studies. *Journal of Thoracic Disease*, *7*(11), E537–E540. https://doi.org/10.3978/j.issn.2072-1439.2015.10.63

- Creswell, J. W., & Creswell, J. D. (2023). *Research design: Qualitative, quantitative, and mixed methods approaches* (6th ed.). SAGE Publications, Inc.
- Denzin, N. K., Lincoln, Y. S., Giardina, M. D., & Cannella, G. S. (Eds.). (2024). *The SAGE handbook of qualitative research* (6th ed.). SAGE Publications
- Kerlinger, F. N. (1973). *Foundations of Behavioral research* (2nd ed., chaps 7,8, 17- 26). Holt, Rinehart, and Winston.
- Kothari, C.R., Garg, Gaurav (2023) *Research Methodology: Methods and Techniques* (5th ed.) New Age International Publishers
- Luthfiandana, R., Santioso, L. L., Febrian, W. D., Soehaditama, J. P., & Sani, I. (2024). Qualitative research concepts: Phenomenology, grounded theory, ethnography, case study, narrative. *Scientia Journal of Applied Management*, *2*(1), 26–36. https://doi.org/10.38035/sjam
- Minc, S. D., Chandanabhumma, P. P., Sedney, C. L., Haggerty, T. S., Davidov, D. M., & Pollini, R. A. (2022). Mixed methods research: A primer for the vascular surgeon. *Seminars in Vascular Surgery*, *35*(4), 447–455. https://doi.org/10.1053/j.semvascsurg.2022.09.003
- Neuman, W. Laurence (2008) Social Research Methods: Qualitative and Quantitative Approaches (6th ed., chap 13) Pearson Education
- Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in implementation research. *Administration and Policy in Mental Health and Mental Health Services Research*, *42*(5), 533–544. https://doi.org/10.1007/s10488-013-0528-y

Suggested Readings

- Dagher, D., & Khan, M. (2025). Writing a systematic review and meta-analysis: A step-by-step guide. *Sports Health*, *17*(5), 885–890. https://doi.org/10.1177/19417381251364686
- M. E. R. (2020). Methodological integrity in critical qualitative research. *The Counseling Psychologist*, *48*(6), 848–874. https://doi.org/10.1177/0011000020950348
- Findley, M. G., & Faten, A. (2024). Vulnerability in research ethics: A call for assessing vulnerability and implementing protections. *Proceedings of the National Academy of Sciences*, *121*(11), https://doi.org/10.1073/pnas.2322821121

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

TOOLS FOR RESEARCH

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Tools for Research	2	2	0	0	As per admission criteria	Nil

Learning Objectives

- Design and evaluate quantitative and qualitative tools.
- Understand data processing and effectively utilize common statistical packages.
- Apply coding techniques, and utilize digital platforms and AI in research design and analysis.

Learning Outcomes

After completing the course, students will be able to:

- Differentiate between major quantitative and qualitative tools.
- Demonstrate proficiency in data entry, coding and cleaning.
- Utilize digital platforms and AI effectively in the formulation, administration, and data collection.
- Proficiently utilize specialized software for qualitative data analysis and quantitative statistical testing.

THEORY
(Credits 2; Hours 30)

UNIT I: Quantitative Tools, Data Coding and Analysis **15 Hours**

This unit introduces quantitative research tools, including questionnaires and rating scales, and the principles of their development, reliability, and validity. It covers major rating scales and key steps in scale construction, analysis, and standardization, along with the use of digital

platforms and AI for tool development and administration. This unit also focuses on quantitative data coding, entry, and cleaning using statistical software. It introduces variable definition, handling of missing data, basic automation through spreadsheet and open-source tools, and familiarization with commonly used statistical software for data management and analysis.

- Quantitative measurement, Variables and construct definition
- Quantitative tool development: Questionnaire, Semi-Structured Interview Schedules.
- Rating Scales Types and Development Process: Item Generation and Content Validation, Item Analysis, Internal Consistency and Factor Analysis, Scale Refinement and Standardization.
- Coding styles and Approaches.
- Assessment of Reliability and Validity of quantitative Tools.
- Data Coding, Entry and Cleaning (Statistical Software): Handling missing data (listwise/pairwise deletion).
- Automation and Data Scripting: Advance excel, other open-source software for data import/export.
- Statistical Software Usage: Navigating common statistical packages
- Leveraging Digital Tools and AI for enhancing the Research lifecycle: Tool Formulation, Data collection and Analysis

UNIT II: Qualitative Tools, Data Coding and Analysis 15 Hours

This unit introduces major qualitative research tools and their application in research. It covers the development and validation of qualitative tools, descriptive and thematic coding techniques, and the use of digital platforms and AI for qualitative data collection and analysis. This unit further focuses on qualitative data coding and analysis using qualitative data analysis software. It introduces the interface and use of QDAS for importing, coding, cleaning, and managing text, audio, and video data, along with an overview of NVivo, ATLAS.ti, and other open-source tools.

- Qualitative tools: In-Depth Interview, Focus Group Discussion, Case Study, Observation, Diaries, Oral Narratives/Stories and others.
- Participatory tools : Types, characteristics and usage in qualitative and participatory researches.

- Developing Qualitative Tools: Tool selection and development, pilot testing and refinement.
- Validity of Qualitative Tools: Qualitative vs. Quantitative Validity, Methods for establishing validity for qualitative tools.
- Coding Techniques: Descriptive and thematic coding
- Digital Platforms and AI for development of qualitative tools and data analysis.
- Qualitative Data Analysis Software (QDAS) Interface: Importing, coding and cleaning different data types (text, audio, video)
- Overview of NVivo, ATLAS.ti and other open-source QDAS software

Essential Readings

UNIT I

This unit aims to build an understanding of quantitative tools used for the purpose of data collection. The unit introduces various types of quantitative data tools, their development and assessment of their reliability and validity. This unit further introduces various rating scales and their development, validation and standardisation. The unit also includes the learning of coding and analysis of quantitative data, basics of data processing scripts and common statistical packages

- Creswell, J. W., & Creswell, J. D. (2023). *Research design: Qualitative, quantitative, and mixed methods approaches* (6th ed.). SAGE Publications.
- Cheema, J. R. (2014). Using listwise deletion to cope with missing data: A cautionary note. *Journal of Educational and Developmental Psychology, 4*(1), 127–134.
- Ghasemi, A., & Zahediasl, S. (2012). Normality tests for statistical analysis.

  International Journal of Endocrinology and Metabolism, 10(2), 486–489.
- Gotschall, T., & Gotschall, T. (2018). EndNote, Mendeley, RefWorks, Zotero: A comparative review. *Journal of Electronic Resources in Medical Libraries, 15*(1), 1–18.
- Hausner, E. T., & Hirt, S. J. (2020). Improving reproducibility in academic data-intensive research through computational workflows. *Frontiers in Research Metrics and Analytics, 5*(7).
- Johnson, R., & Witsel, M. (2018). ORCID: A necessary piece of infrastructure for global research evaluation. *Frontiers in Research Metrics and Analytics, 3*(28).

UNIT II

This unit introduces various types of qualitative tools used in research, their development, pilot testing and refinement. The unit also introduces techniques of establishing validity and of such qualitative tools of data collection. This section also discusses prominent digital and AI tools for qualitative research and provides an overview of qualitative data coding and analysis software.

- Allsop, D. B., Chelladurai, J. M., Kimball, E. R., Marks, L. D., & Hendricks, J. J. (2022). Qualitative methods with NVivo software: A practical guide for analyzing qualitative data. Psych, 4(2), 142–159.
- Al-Kassimi, M., & Al-Sharqi, A. (2020). Data visualization techniques: Model and taxonomy. International Journal of Research in Engineering and Science, 8(3), 44–53.
- Creswell, J. W., & Creswell, J. D. (2023). *Research design: Qualitative, quantitative, and mixed methods approaches* (6th ed.). SAGE Publications.
- Gotschall, T., & Gotschall, T. (2018). EndNote, Mendeley, RefWorks, Zotero: A comparative review. *Journal of Electronic Resources in Medical Libraries, 15*(1), 1–18.
- Johnson, R., & Witsel, M. (2018). ORCID: A necessary piece of infrastructure for global research evaluation. *Frontiers in Research Metrics and Analytics, 3*(28).
- Provalis Research. (n.d.). QDA Miner: Qualitative Data Analysis Software. Retrieved from https://provalisresearch.com/products/qualitative-data-analysis-software/
- Urban Institute. (2025). Urban Institute Data Visualization Style Guide. Retrieved from http://urbaninstitute.github.io/graphics-styleguide/
- Weninger, M. (2024). Open coding in qualitative research: A systematic review and guide. *ResearchGate* (preprint).

Suggested Readings:

- Kang, H. (2013). The prevention and handling of the missing data. *Korean Journal of Anesthesiology, 64*(5), 402–406.
- Kery, M., & Myers, M. (2020). Improving reproducibility in academic data-intensive research through computational workflows. *Frontiers in Research Metrics and Analytics, 5*(7).
- Saravanakumar, A. P., & Shitharth, S. (2023). A survey on sentiment analysis: Techniques, algorithms, and application areas. *Journal of King Saud University – Computer and Information Sciences, 35*(3).

- Takes, F. W. (2024). Gephi tutorial for graph/network visualization. Retrieved from https://github.com/franktakes/gephi-tutorial

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

SEMESTER -II

DISCIPLINE SPECIFIC ELECTIVE
PRECISION NUTRITION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
Precision Nutrition	**4**	**3**	**0**	**1**		**Nil**

Learning Objectives:

- To understand the concepts of Precision nutrition, its elements, nutritional indicators and the role of artificial intelligence in Precision nutrition.
- To gain a foundational understanding of DNA structure, how genotypes translate into phenotypes, and how variations such as mutations, SNPs, and CNVs influence individual biological differences
- To understand the key molecular biology techniques used to analyze proteins and nucleic acids
- To understand the composition and diversity of the human gut microbiota and how the gut microbiota communicates with the brain through the gut–brain axis, influencing mood, behavior, and neurological health.

Learning Outcomes:

The students would be able to:

- Understand the principles of Precision Nutrition and identify its key components, nutritional biomarkers, and the ways artificial intelligence contributes to personalized dietary recommendations.
- Describe DNA structure and genetic mechanisms, and analyse how genotypes translate into phenotypes, including the impact of mutations, SNPs, and CNVs on individual variability in nutritional responses.
- Apply core molecular biology techniques such as electrophoresis, PCR-based methods, sequencing, and immunoassays—to investigate proteins, genes, and molecular markers relevant to nutrition and health.

- Evaluate the diversity and functions of the human gut microbiota and explain how microbial communities interact with the brain through the gut–brain axis to influence metabolism, behaviour, and overall health.

THEORY

(Credits 3; Hours 45)

UNIT-I: Introduction to Precision Nutrition and Artificial Intelligence (AI) 8 Hours

Students will be introduced about the Precision nutrition, its elements, nutritional indicators and the role of artificial intelligence in Precision nutrition.

- Introduction to Precision Nutrition
- Elements in developing Precision Nutrition
- Nutritional indicators (Anthropometry, clinical, biochemical, diet), biomarkers, physical activity and Precision Nutrition
- Role of AI in Precision Nutrition

UNIT II: Nutrigenomics and Metabolomics 15 Hours

Students will gain a foundational understanding of **DNA structure**, how **genotypes** translate into **phenotypes,** and how variations such as **mutations, SNPs, and CNVs** influence individual biological differences. They will explore **nutrigenomics, metabolomics**, the **epigenome**, and the **exposome** to understand how diet and environmental factors shape gene activity.

- DNA structure, Genotype & Phenotype, Gene variations, Mutations, SNPs, CNVs.
- Nutrigenomics, Metabolomics, Epigenome, Exposome
- Epigenetics and its mechanisms: DNA methylation, Histone modification and non-coding RNA
- The Effect of Micro Nutrients, Macro Nutrients and Bioactive Components on Gene Expression
- Altered Gene expression in Chronic Conditions- Obesity, Type-II diabetes, cardiovascular diseases and cancer.
- Circadian Rhythm, gene expression and Chronobiology
- Metabolomics in understanding relation between diet, metabolism and health

- Tools and Techniques to analyze metabolites from food and metabolic processes-Mass spectrometry and NMR

UNIT III: Molecular techniques in Nutritional genomics and Metabolomics 15 Hours

Students will gain an understanding of key molecular biology techniques used to analyze proteins and nucleic acids. They will learn the principles and applications of **western blotting** for protein separation and identification. They will also understand how **ELISA** is used to detect and quantify specific proteins or antibodies in biological samples.

- Introduction to western blotting
- Enzyme Linked Immunosorbent Assay (ELISA)
- Polymerase chain reaction (PCR)
- RT-PCR and Real time PCR.
- Introduction to next generation DNA sequencing
- Introduction to Microarray and its applications

UNIT IV: Diet and Gut Microbiota 7 Hours

Students will develop an understanding of the **composition and diversity of the human gut microbiota**, including the major microbial groups that inhabit the digestive system. They will explore how the gut microbiota communicates with the brain through the **gut–brain axis**, influencing mood, behavior, and neurological health.

- Human Gut Microbiota Composition
- Microbiota and Gut-brain Axis
- Influence of Diet on Gut Microbiota
- Microbiota and its relation with Obesity and other disease conditions (Type II Diabetes, CVDs, IBD, Neurodegenerative diseases)

PRACTICALS

(Credit 1; Hours 30)

1. Evaluation of case studies from the published literature to understand precision nutrition.
2. Assessment of Munich Chronotype questionnaire and Pittsburgh Sleep Quality Index
3. Genomic DNA isolation and its purity check
4. Agarose Gel electrophoresis
5. DNA quantification using Diphenylamine/UV-method
6. RNA Quantification using orcinol/ UV-method

7. Lab visit for demonstration of PCR
8. Interpretation of Genetic tests for various disease conditions.

Essential Readings:

UNIT I

- Kirk, D., Catal, C., & Tekinerdogan, B. (2021). Precision nutrition: A systematic literature review. *Computers in Biology and Medicine*, *133*, 104365.
- Liang, Y., Xiao, R., Huang, F., Lin, Q., Guo, J., Zeng, W., & Dong, J. (2024). AI nutritionist: Intelligent software as the next generation pioneer of precision nutrition. *Computers in biology and medicine*, *178*, 108711.

UNIT II

- Simopoulos, A. P., & Ordovás, J. M. (Eds.). (2004). *Nutrigenetics and nutrigenomics* (Vol. 93). Karger Medical and Scientific Publishers.
- Carlberg, C., Ulven, S. M., & Molnár, F. (2016). *Nutrigenomics*. Berlin, Germany: Springer.
- Paro, R., Grossniklaus, U., Santoro, R., & Wutz, A. (2021). *Introduction to Epigenetics*. Springer Nature.
- Singh, V., Mani, I. (2023). *Epigenetics in Health and Disease*. Academic Press.

UNIT III

- Kumar, P. (2016). *Tools and Techniques of Biophysics and Molecular Biology.* Pathfinder Publication.
- Wilson, K., Hofmann, A., Walker, J. M., & Clokie, S. (Eds.). (2018). *Wilson and Walker's principles and techniques of biochemistry and molecular biology*. Cambridge university press.

UNIT IV

- Ramos, S., & Martín, M. Á. (2021). Impact of diet on gut microbiota. *Current Opinion in Food Science*, *37*, 83-90.

Suggested Readings:

1. de Toro-Martín, J., Arsenault, B. J., Després, J. P., & Vohl, M. C. (2017). Precision nutrition: a review of personalized nutritional approaches for the prevention and management of metabolic syndrome. *Nutrients*, *9*(8), 913.
2. Wang, D. D., & Hu, F. B. (2018). Precision nutrition for prevention and management of type 2 diabetes. *The lancet Diabetes & endocrinology*, *6*(5), 416-426.
3. Voruganti, V. S. (2022). Precision nutrition: recent advances in obesity. *Physiology*.
4. Liang, Y., Xiao, R., Huang, F., Lin, Q., Guo, J., Zeng, W., & Dong, J. (2024). AI nutritionist: Intelligent software as the next generation pioneer of precision nutrition. *Computers in biology and medicine*, *178*, 108711.
5. Ferreira, D. D., Ferreira, L. G., Amorim, K. A., Delfino, D. C. T., & Ferreira, A. C. B. H. (2025). Assessing the Links Between Artificial Intelligence and Precision Nutrition. *Current Nutrition Reports*, *14*(1), 1-17.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

CHALLENGES IN CLINICAL NUTRITION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Challenges in Clinical Nutrition	**4**	**2**	**0**	**2**		**Nil**

Learning Objectives

- To understand the process of diet counselling in nutrition care process.
- To understand the nutrition related challenges faced by specific groups like elderly and paediatric population.
- To understand the nutritional management of cancer patients
- To understand the latest technologies which can aid in nutrition care

Learning Outcomes

Student will be able to:

- Use the principles of dietary counselling in various diseases.
- Acquire an in depth understanding about clinical nutrition challenges faced by elderly and children
- Plan diets for cancer patients undergoing different types of therapy
- Acquire skills to use latest technologies in the nutrition care process

THEORY

(Credits 2; Hours 30)

UNIT I: Diet Counselling **4 Hours**

Students will be introduced to the concept of nutrition counselling, Behaviour Change Communication models and strategies for counselling

- Concept and importance of counselling in the nutrition care process
- Understanding dietary patterns and food choices and their impact on counselling
- Behaviour Change Communication and Models for behaviour change
- Counselling strategies

UNIT II: Geriatric and Paediatric Nutrition **16 Hours**

Students will be introduced to the concept of geriatric and paediatric nutrition, common clinical nutrition related problems faced by elderly and children, and strategies for nutritional management.

- Definition of ageing, geriatric and paediatric nutrition, physiological and biochemical changes impacting nutrition among elderly and children
- Assessment of nutritional status of older adults and children in clinical/hospital setting
- Major nutritional and health problems during old age including drug nutrient interactions for selected health conditions:
  Musculoskeletal: osteoporosis, sarcopenia, arthritis and frailty.
  Neurological and cognitive: Mild Cognitive Impairment, Alzheimer's disease, Vascular and Lewy Body Dementia, Parkinson's disease, depression
  Metabolic: obesity, malnutrition, constipation, dehydration, diabetes, hypertension and cardiovascular diseases
- Nutritional management of Inborn Errors of Metabolism in infants and children - phenylketonuria, maple syrup urine disease, galactosemia, congenital hypothyroidism, congenital adrenal hyperplasia
- Epilepsy in children – special diets for management (Ketogenic diet, Atkins diet)
- Nutritional challenges in developmental disabilities in children- autism spectrum disorders, cerebral palsy, attention deficit hyperactivity disorder
- Paediatric diabetes: Type 1 DM – management and impact on growth and management
- Nephrotic syndrome and CKD in children - Impact on growth and management

UNIT III: Nutrition and Cancer **6 Hours**

Students will be introduced to the concept of onco-nutrition and nutritional management of cancer patients.

- Carcinogenesis and Mutagenesis- Diet-Cancer relationship
- Nutrition care process for cancer patients– nutrition, screening and assessment, goals of nutrition care and intervention
- Nutritional implications of cancer therapy – chemotherapy, radiation, biotherapy, hormone, immunotherapy.
- Role of food in cancer prevention– fibre, antioxidants, phytochemicals

UNIT IV: New technology in nutrition practice **4 Hours**

Students will be introduced to the newer concepts in nutrition like AI in nutrition, Chrono and nano nutrition, diet and mental health and smart health technologies.

- Applications of Artificial Intelligence in nutrition and dietetics and AI sources related to nutrition
- Microbiome and nutrition, chrono nutrition and nano nutrition
- Diet and mental health
- Application of smart health care digital devices in clinical nutrition service

PRACTICAL
(Credits 2; Hours 60)

Planning and preparation of diets and dietary counselling for following diseases

1. Osteoporosis
2. Sarcopenia
3. Alzheimer's Disease
4. Inborn errors (any one)
5. Tube feed for cancer patient
6. Epilepsy
7. Neurodevelopmental disorder (ADHD/Autism/cerebral palsy)
8. Paediatric Kidney disease
9. Type I diabetes (Paediatric)
10. Depression

Essential Readings

UNIT I

Students will be introduced to the concept of nutrition counselling, Behaviour Change Communication models and strategies for counselling

- Narula Uma. Communication Models (2023); Atlantic Publishers and Distributors (P) Ltd ISBN 8126906766
- Mahan, L.K. and Escott-Stump, S. (2021): Krause's Food Nutrition and Nutrition Care Process, 16th Edition, Elsevier Pvt. Ltd. ISBN 032381025X
- Snetselaar L. (2009). Nutrition Counseling Skills for the Nutrition Care Process. Fourth Ed. Sudbury, Massachusetts: Jones Bartlett Publishers. ISBN-13: 978-0-7637-2960-8
- Holli B Betsy and Beto A Judith. (2014). Nutrition Counseling and Education Skills for Dietetics Professionals. Sixth edition. USA: Lippincot Williams and Wilkins; Wolters Kluwer. ISBN-10: 1451120389

UNIT II

Students will be introduced to the concept of geriatric and paediatric nutrition, common clinical nutrition related problems faced by elderly and children, and strategies for nutritional management.

- Indian Dietetics Association, (2018) Clinical Dietetics Manual, 2nd Edition. Elite Publishing House Pvt. Ltd.

- Khanna K, Gupta S, Seth R, Passi SJ, Seth R, Mahna R, Puri S (2013). Textbook of Nutrition and Dietetics.2nd Edn. Phoenix Publishing House Pvt. Ltd.
- Raymond, J.L. and Morrow, K. (2020) Krause and Mahan's Food & the Nutrition Care Process. 15th ed. Saunders-Elsevier
- Seth, V. and Singh K. (eds.) (2024) Principles of Medical Nutrition Therapy for Positive Clinical Outcomes, 2nd Edition. Elite Publishing House Pvt. Ltd.
- Mehta, P and Chouhan, K (2016) Ageing, Nutrition and Health. Kalpaz Publication
- Goday, P.S and Walia, C (Eds) (2022) Paediatric Nutrition for Dietitians. Taylor & Francis Ltd. CRC Press
- ESPEN guideline on clinical nutrition and hydration in geriatrics. DOI link: https://doi.org/10.1016/j.clnu.2018.05.024
- ESPEN guideline clinical nutrition in neurology. DOI: 10.1016/j.clnu.2017.09.003

UNIT III

Students will be introduced to the concept of onco-nutrition and nutritional management of cancer patients.

- Raymond, J.L. and Morrow, K. (2020) Krause and Mahan's Food & the Nutrition Care Process. 15th ed. Saunders-Elsevier
- Seth, V. and Singh K. (eds.) (2024) Principles of Medical Nutrition Therapy for Positive Clinical Outcomes, 2nd Edition. Elite Publishing House Pvt. Ltd.
- Shivshankar, T. (2025) Onco-nutrition: Bridging Cancer Care and Nutritional Science Publisher: Sundaram Digital Publication House. ISBN: 9788196975562
- Narimatsu, H., & Yaguchi, Y. T. (2022). The Role of Diet and Nutrition in Cancer: Prevention, Treatment, and Survival. *Nutrients*, *14*(16), 3329. https://doi.org/10.3390/nu14163329

UNIT IV

Students will be introduced to the newer concepts in nutrition like AI in nutrition, Chrono and nano nutrition, diet and mental health and smart health technologies.

- de Oliveira Melo, N. C., Cuevas-Sierra, A., Souto, V. F., & Martínez, J. A. (2024). Biological Rhythms, Chrono-Nutrition, and Gut Microbiota: Epigenomics Insights for Precision Nutrition and Metabolic Health. *Biomolecules*, *14*(5), 559. https://doi.org/10.3390/biom14050559
- Grajek, M., Krupa-Kotara, K., Białek-Dratwa, A., Sobczyk, K., Grot, M., Kowalski, O., & Staśkiewicz, W. (2022). Nutrition and mental health: A review of current knowledge about the impact of diet on mental health. *Frontiers in nutrition*, *9*, 943998. https://doi.org/10.3389/fnut.2022.943998

Suggested Readings

- Chowdhary S.R and Aeri B.T. (2023) Textbook of Food Science and Nutrition. Aarahan Publishers. ISBN:978-93-87270-08-4 https://amzn.eu/d/blLz8S8
- Gibney MJ, Elia M, Ljungqvist &Dowsett J. (2005) Clinical Nutrition. The Nutrition Society Textbook Series. Blackwell Publishing Company
- ICMR (2020) Estimated Average Requirements and Recommended Dietary Allowances for Indians. Published by National Institute of Nutrition, Hyderabad.
- Joshi Y K.(2008) Basics of Clinical Nutrition 2nd ed. Jaypee Brothers Medical Publishers

- Longvah T, Ananthan R, Bhaskarachary K and Venkaiah K (2017). Indian Food Composition Tables. National Institute of Nutrition, ICMR, Hyderabad.
- Puri S, Bhagat A, Aeri, BT, Sharma A (2019). Food Exchange List: A Tool for meal Planning. Elite Publishing House. New Delhi.
- Shils, M.E., Shike, M, Ross, A.C., Caballero B and Cousins RJ (2005) Modern Nutrition in Health and Disease. 10th ed. Lipincott, William and Wilkins.
- Siddhu A, Bhatia N, Singh K, Gupta S (2017). Compilation of food exchange list, technical series 6, Lady Irwin College, University of Delhi. Publ. Global Books Organisation, Delhi
- Williams, S.R. (2001) Basic Nutrition and Diet Therapy. 11th ed. Times Mirror Mosby College Publishing
- Racz B., Duskova M., Starka L., Hainer V., Kunesova M. Links between the circadian rhythm, obesity and the microbiome. Physiol. Res. 2018;67:S409–S420.
- https://www.cancer.gov/about-cancer/treatment/side-effects/nutrition

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
NUTRITIONAL CARE OF THE ELDERLY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Nutritional Care of the Elderly	4	3	0	1		Nil

Learning Objectives

- To acquire knowledge about the physiological, metabolic, and psychosocial changes associated with aging and their impact on nutritional status in the elderly population.
- To comprehend the macro- and micronutrient requirements, dietary recommendations, and nutritional guidelines for older adults.
- To identify and assess common nutrition-related health conditions, risks and drug nutrient interactions among elderly.
- To apply standardized nutritional assessment tools, dietary planning methods, and communication strategies for effective nutrition management.

Learning Outcomes

The students would be able to:

- Discuss the biological, sociocultural, and behavioural dimensions influencing elderly nutrition.
- Assess and interpret the nutritional status and risks among aged individuals using appropriate assessment tools.
- Formulate and justify evidence-based dietary plans and nutrition interventions suitable for elderly health conditions.
- Communicate and counsel using appropriate IEC material for families and caregivers.

THEORY
(Credits 3; Hours 45)

UNIT I: Introduction to Aging and Nutrition 12 Hours

This unit highlights the concept of aging process, age related physiological changes, nutrition associated health issues, socio cultural factors and challenges of elderly care.

- Process of aging, physiological changes and functional decline
- Nutrition-related health issues such as undernutrition, obesity, sarcopenia, osteoporosis, and anemia
- Interplay between nutrition and chronic diseases (diabetes, cardiovascular diseases, dementia), association between nutritional deficiencies, functional decline and frailty among elderly
- Socio-cultural factors influencing elderly nutrition
- Demographic trends and challenges of elderly care in India
- National Policy on Older Persons (NPOP) and National Programme for Health Care of Elderly (NPHCE)

UNIT II: Nutritional Requirements and Nutritional Assessment of the Elderly 12 Hours

This unit highlights specific nutrient needs of the elderly, nutritional assessment and life style modification for healthy aging.

- Macro- and micronutrient needs specific to elderly individuals
- Changes in energy metabolism and hydration needs in old age
- Use of standardized nutritional assessment techniques (MNA, GNRI, CGA)
- Utilizing interpretation and assessment outcomes to guide intervention planning
- Nutrition guidance and lifestyle modification for healthy aging

UNIT III: Dietary Recommendations and Nutritional Management for Various Health Conditions 17 Hours

This unit focuses on Indian dietary guidelines for elderly, appropriate diets and drug nutrient interactions

- Indian dietary guidelines for elderly and dietary recommendations
- Balanced, culturally appropriate diets for elderly with varying health conditions
  - Gastrointestinal disorders – Flatulence, Constipation, GERD, Diarrhoea
  - Weight Imbalances – Obesity, Underweight
  - Hypertension, Dyslipidemias, Diabetes Mellitus
  - Osteoporosis, Arthritis
  - Neurological disorders: Dementia, Parkinsons Disease, Alzheimer's Disease
- Nutrient and drug Interactions, role of functional foods in aging, Use of nutraceuticals and supplements

UNIT 1V: Communication strategies for effective Counselling to promote healthy aging 4 Hours

This unit focuses on the communication strategies to address the age related nutrition needs, chronic disease conditions and promotion of healthy life style for healthy aging

- Educational and counseling strategies using appropriate IEC materials addressing multiple chronic disease conditions in elderly
- Addressing barriers and enablers for healthy eating specific to elderly

PRACTICAL
(Credits 1; Hours 30)

1. Dietary intake assessment using 24-hour recall and food frequency questionnaires, adaptations of assessment tools to address short term memory loss among elderly
2. Demonstration of measuring anthropometric parameters relevant to elderly nutrition (BMI, mid-upper arm circumference, proxy measurements for height).
3. Diet planning for elderly with diabetes, hypertension, osteoporosis, and digestive disorders.
4. Planning and preparation of specialized therapeutic recipes (soft diet, high-protein snacks, low sodium meals)
5. Planning of Cyclic Menu for residential institutions for elderly accommodating regional preferences and medical conditions.
6. Designing culturally appropriate nutrition education materials.
7. Field visit or virtual tours to community or government elderly nutrition programs and evaluation of existing nutrition interventions for elderly.

Essential Readings

UNIT I

- Agarwal, E., Miller, M., Yaxley, A., & Isenring, E. (2024). Malnutrition in the elderly: A narrative review. *Maturitas*, 128, 1-12.
- National Policy on Older Persons (NPOP) and National Programme for Health Care of Elderly (NPHCE) Document, Government of India

UNIT II

- Barry M., &Murphy, R. (2025). *Geriatric Nutrition: Comprehensive Guide for Clinical Practice (2nd ed.).* Springer.
- Kaiser, M. J., Bauer, J. M., & Schroll, M. (2025). Assessment tools for nutritional status in older persons: MNA and beyond. *Clinical Nutrition*, 44(1), 19-28
- Keller, H. H., & Goy, R. (2023). *Nutrition and Aging: Assessment and Treatment of Nutrition-Related Health Problems*. CRC Press.
- Raymond, J. L., & Mahan, L. K. (Eds.). (2024). *Krause and Mahan's Food and the Nutrition care process (19th ed.*). Elsevier.

UNIT III

- Brownie, S., & Houweling, T. A. J. (2024). Nutritional interventions for sarcopenia in older adults: A systematic review. *Journal of Nutrition, Health & Aging,* 28(4), 402–412
- Dietary Guidelines for Indians (2024) *Dietary Guidelines for Indians: A manual*., NIN
- McIntosh, S. N. (2021). *Williams' Basic Nutrition and Diet Therapy (16th ed.).* Elsevier.

- Tucker, K. L., Duggan, C. P., Jensen, G. L., & Peterson, K. E. (Eds.). (2024). *Modern Nutrition in Health and Disease (12th ed.*). Jones & Bartlett Learning.

UNIT IV

- Miller A, Steinle N (2020) Barriers to Healthy Eating in the Elderly; A National and Global Perspective. J Hum Nutr Food Sci 8(1): 1130.
- Mohan, S., & Singh, A. (2024). Behavior change communication strategies in elderly nutrition programs: Evidence from India. *Nutrition and Health*, 30(2), 123–134.

Suggested Reading

- Gosh, S., & Reddy, V. (2023). Nutritional challenges and solutions in India's aging population. *Indian Journal of Public Health*, 67(2), 115–121.
- IFCT (2017) *Indian Food Composition Tables*, NIN
- Longvah, T., Ananthan, R., Bhaskarachary, K. and Venkaiah, K. (2017). Indian Food Composition Tables. National Institute of Nutrition, ICMR, Hyderabad.
- World Health Organization. (2024). *Integrated care for older people: Guidelines on community-level interventions to manage declines in intrinsic capacity* (WHO/NMH/NMA/20.4). World Health Organization.
- Yen, C., & Lin, S. (2024). Nutrition and chronic disease prevention in the elderly: Current perspectives. *Frontiers in Nutrition*, 11, Article 785632.
- Zeng, Y., & Xiao, S. (2025). Advances in nutritional pharmacology relevant to aging populations. In S. R. Murphy & J. T. Lee (Eds.), *Pharmacology and Nutrition in Aging* (pp. 115-143). Elsevier.
- The Encyclopedia of Ageing. 4th Edition Vol I and Vol II Editor Chief- Richard Schulz. Assoc Editors- Linda Noelker, Kenneth Rockwood, Richard Sprott. 2006. Springer Publishing Company. New York.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
PROGRAMME PLANNING IN PUBLIC HEALTH NUTRITION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Programme Planning in Public Health Nutrition	**4**	**2**	**0**	**2**		**Nil**

Learning Objectives

- To understand the planning and management of public health nutrition programmes.
- To gain insight into the process of programme monitoring and evaluation.
- To understand the concept of nutritional surveillance.
- To get exposure to the key components of nutrition in emergency and disaster situations.

Learning Outcomes

The students would be able to:

- Become familiar with the process of planning and management of public health nutrition programmes.
- Apply monitoring and evaluation concepts in public health nutrition programmes and interpret programme indicators.
- Describe nutritional surveillance systems, including their purpose, components, and role in public health decision-making.
- Identify nutrition-related challenges during emergencies/disasters and recommend strategies to tackle them.
- Acquire skills in conducting situational analysis/needs assessment, developing action plans for public health nutrition programmes, and their evaluation.

THEORY
(Credits 2; Hours 30)

UNIT I: Planning Public Health Nutrition Programmes **14 Hours**

This unit deals with the process involved in planning public health nutrition programmes. It

emphasizes the importance of understanding community needs, setting appropriate goals, selecting interventions, and designing effective implementation and evaluation strategies.

- Planning process in public health nutrition – community needs assessment/situational analysis, setting goals and objectives, selecting indicators, selecting interventions, planning for programme implementation and resources, planning for programme monitoring and evaluation, planning for programme termination, stakeholder participation in programme management

UNIT II: Programme Monitoring and Evaluation 8 Hours

This unit focuses on the essential concepts, tools, and processes involved in monitoring and evaluating public health nutrition programmes.

- Programme monitoring: Definition, purpose, indicators, data collection and analysis, monitoring tools (e.g. Health Management Information System, Poshan tracker)
- Programme evaluation: Definition, purpose, types, indicators, steps of evaluation, strategies for data collection, evaluation designs

UNIT III: Nutrition surveillance 4 Hours

This unit deals with the core concepts and components of nutrition surveillance and highlights its significance in programme planning and public health decision-making.

- Definition, objectives, indicators, agencies involved in nutrition surveillance
- Nutrition surveillance for programme planning – Triple A approach

UNIT IV: Nutrition in Emergencies and Disasters 4 Hours

This unit deals with the nutritional challenges that arise during emergencies and disaster situations, focusing on the needs of vulnerable groups and the strategies used for assessment, relief, and rehabilitation.

- Natural and manmade disasters resulting in disaster situations
- Nutritional problems in emergencies in vulnerable groups
- Assessment and surveillance of affected population groups
- Nutritional relief and rehabilitation in disaster situations

PRACTICAL
(Credits 2; Hours 60)

1. Field visit to observe implementation of a national public health programme.
2. Critical appraisal of ongoing national public health nutrition programmes.
3. Prepare a fact sheet to present a situational analysis of an identified public health nutrition problem.
4. Prepare a tool to collect data for the situational analysis of an identified public health nutrition problem.

5. Identify key interventions and present evidence on the effectiveness and efficacy of the chosen intervention for an identified public health nutrition problem.
6. Identification of key indicators for evaluation of national public health nutrition programmes.
7. Plan a suitable action plan for: Conducting situational analysis/community needs assessment of an identified public health nutrition problem, or For effectively managing an identified public health nutrition problem, or Conducting an evaluation for public health nutrition programme.

Essential Readings

UNIT I

- Vir, S.C. (2021). Public Health Nutrition in Developing Countries. Volume-II (2nd ed.) Woodhead Publishing India Pvt Ltd.
- Park, K. (2023). Park's Textbook of Preventive and Social Medicine (27th ed.), Jabalpur, India: Banarasidas Bhanot Publishers.
- Boyle, M. A. (2022). Community Nutrition in Action (8th ed.). Cengage Learning.

UNIT II

- Vir, S.C. (2021). Public Health Nutrition in Developing Countries. Volume-II (2nd ed.) Woodhead Publishing India Pvt Ltd.
- Boyle, M. A. (2022). Community Nutrition in Action (8th ed.). Cengage Learning.

UNIT III

- Al Jawaldeh, A., Osman, D., Tawfik, A., & World Health Organization, Regional Office for the Eastern Mediterranean. (2013). *Food and nutrition surveillance systems: Technical guide for the development of a food and nutrition surveillance system for countries in the Eastern Mediterranean Region* (WHO Regional Publication, Eastern Mediterranean Series No. 33). WHO Regional Office for the Eastern Mediterranean. https://applications.emro.who.int/dsaf/EMROPUB_2013_EN_1576.pdf
- Tuffrey, V. (2016). *Nutrition surveillance systems: Their use and value* (Report). Save the Children UK.

https://resourcecentre.savethechildren.net/pdf/nutrition_surveillance_systems.pdf

UNIT IV

- World Health Organization. (2000). Management of nutrition in major emergencies. WHO. https://www.who.int/publications
- World Health Organization, UNITed Nations High Commissioner for Refugees, UNITed Nations Children's Fund, & World Food Programme. (2004, February 23). Food and nutrition needs in emergencies (Technical document). https://www.who.int/publications/i/item/food-and-nutrition-needs-in-emergencies
- World Health Organization Regional Office for the Eastern Mediterranean. (n.d.). *Nutrition in emergencies*. WHO. https://www.emro.who.int/nutrition/nutrition-in-emergencies/
- Vir, S. C. (Ed.). (2011). *Public health nutrition in developing countries* (2-volume set). Woodhead Publishing India.

Suggested Readings

- Bamji, M.S., Hemalatha, R., and Reddy, G.B. (2025). Textbook of Human Nutrition, 5th edition. CBS Publishers and Distributors.
- Ministry of Health & Family Welfare. (2019). *National Family Health Survey (NFHS-5) India 2019–21: State fact sheets*. Government of India. https://rchiips.org/nfhs/factsheet_NFHS-5.shtml
- Ministry of Health & Family Welfare. (2018). *Comprehensive National Nutrition Survey (CNNS) India 2016–18: National report*. Government of India & UNICEF.
- Ministry of Women & Child Development. (2021). *POSHAN Abhiyaan: Operational guidelines*. Government of India. https://poshanabhiyaan.gov.in
- Ministry of Health & Family Welfare. (2020). *Health Management Information System (HMIS) manual*. Government of India.
- NITI Aayog. (2017). *National nutrition strategy*. Government of India. https://library.niti.gov.in/cgi-bin/koha/opac-retrieve-file.pl?id=a0185815c4868f92466245d161108c36
- WFP India & National Institute of Disaster Management (NIDM), Ministry of Home Affairs, Government of India. (2022, November 11). Ensuring food and nutrition security in climate fragilities and disasters: The 31 inspiring practices. World Food Programme. https://www.wfp.org/publications/ensuring-food-and-nutrition-security-climate-fragilities-and-disasters-31-inspiring
- Vir, S.C. (2023). Child, Adolescent and Woman Nutrition in India: Public Policies, Programmes and Progress. KW Publishers Pvt. Ltd.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
PLANT PRODUCTS PROCESSING AND PRESERVATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Plant Products Processing and Preservation	**4**	**3**	**0**	**1**		**Nil**

Learning Objectives

- To understand the composition, structure, and functional properties of major plant foods and relate them to processing behaviour and nutritional quality.
- To gain comprehensive knowledge of traditional and modern processing technologies used for milling, extraction, preservation, minimal processing, and value addition in plant-based foods.
- To develop the ability to evaluate post-harvest physiological changes, quality attributes, and apply scientific principles to reduce post-harvest losses.
- To develop practical skills in assessing plant food quality and preparing value-added, exotic and healthy products from cereals, pulses, oilseeds, and fruits & vegetables.

Learning Outcomes

The students would be able to:

- Explain the structure, composition, and functional properties of major plant food groups and their relevance to processing and nutrition.
- Compare traditional and modern processing methods and their effects on quality, safety, and nutritional value of plant foods.
- Evaluate physicochemical, nutritional, and sensory changes during processing, preservation, and value addition of plant foods.
- Demonstrate practical skills in quality assessment and small-scale processing of cereals, pulses, oilseeds, fruits, and vegetables.

THEORY
(Credits 3; Hours 45)

UNIT I: Cereals, Millets & Coarse Grains Technology
(15 Hours)

This unit deals with the structure, composition, nutritive value, milling and utilisation of products of cereals and millets.

- Structure of wheat grain, nutritive value and composition, physical and chemical properties.
- Milling of wheat: Roller milling process, flour fractions, flour treatments: bleaching, maturing agents, products and by-products of milling process.
- Introduction to other cereals and millets: Rice, maize, oats, rye, corn, pearl millet; their nutritional importance and commercial value (Puffed rice, Rice flakes, parboiling of rice, extruded and fortified rice).

UNIT II: Pulse & Oilseed Processing Technology
(8 Hours)

This unit deals with the composition, nutritive value, processing of pulses and different oilseeds and methods of texturization of plant protein.

- Pulses: Composition, protein quality, antinutritional factors, soaking, germination, fermentation
- Oilseeds: Seed structure & composition, Pre-processing: cleaning, conditioning, cracking, flaking, Mechanical & solvent extraction, oil refining: physical and chemical
- TVP, high-moisture extrusion, plant-based meat applications

UNIT III: Post-harvest management of Fruits & Vegetables
(10 Hours)

This unit deals with the post-harvest changes and management of fruits and vegetables.

- Post-Harvest Physiology & Quality: Maturity indices, ripening physiology, Climacteric vs non-climacteric, sorting, grading, washing, peeling, minimal processing, control of enzymatic browning
- Post-harvest changes and management of fruits and vegetables: Climacteric rise, horticultural maturity, physiological maturity, maturity indices, and process of ripening-physical and chemical changes. Causes of post-harvest losses, measures to reduce post–harvest losses in F & V, CA storage, and MAP.

UNIT IV: Fruits & Vegetables Processing
(12 Hours)

This unit deals with the processing and preservation of fruits and vegetables.

- Canning: Selection of fruits and vegetables, process of canning, factors affecting the process- time and temperature, containers of packing, lacquering, syrups and brines for canning, spoilage in canned foods.
- Jams, jellies and marmalades: Introduction, Jam: Constituents, selection of fruits, processing & technology, Jelly: Essential constituents (Role of pectin, ratio), Theory of jelly formation and defects in jelly.
- Tomato products: Selection of tomatoes, pulping & processing of tomato juice, tomato puree, paste, ketchup, sauce and soup**.**

PRACTICAL
(Credits 1; Hours 30)

List of Experiments

- Determination of physical and chemical properties of wheat
- Determination of gluten quality and quantity
- Sedimentation value of flour/ Fermenting power of yeast
- Evaluation of flour suitability through baking tests
- Preparation of plant protein-based product- soy/pulse protein-based tofu, soymilk, high protein drink, soy yoghurt, almond protein bars
- Determination of maturity indices of fruits & vegetables-TSS, Sugar:acid, TA, size & shape, weight & firmness.
- Processing of tomato products (ketchup and sauce).
- Processing of jams, jellies and marmalades.

Essential Readings

UNIT I

- Kent, N. L. (1994). *Technology of cereals* (4th ed.). Pergamon Press.
- Matz A Samuel, *Bakery Technology and Engineering*.
- Food Safety and Standards Authority of India. (2022). Food safety and testing manuals. Government of India.

UNIT II

- Chakraverty, A. (2001). *Post-harvest technology of cereals, pulses and oilseeds* (3rd ed.). Oxford & IBH Publishing Co. Pvt. Ltd.
- Manay, S. and Sharaswamy, M. (1987). Food Facts and Priniciples. Wiley Eastern Publisher.

UNIT III

- Wills, R., McGlasson, B., Graham, D., Joyce, D., & Geeson, J. (2007). *Postharvest: An introduction to the physiology and handling of fruit and vegetables* (5th ed.). CABI Publishing.
- Salikhe D K and Kadam SS (1995) *Handbook of fruit science and technology. Production Composition, Storage and processing*. Marcel Decker inc, New York

UNIT IV

- Siddapa, GS (1986) *Preservation of Fruits and Vegetables*, ICAR Publication
- Srivastava, R. P., & Kumar, S. (1998). *Fruit and vegetable preservation: Principles and practices* (3rd ed.). CBS Publishers & Distributors.
- Salikhe D K and Kadam SS (1995) *Handbook of fruit science and technology. Production Composition, Storage and processing*. Marcel Decker inc, New York

Suggested Reading

Handbook of Research on Food Processing and Preservation Technologies (5 Vols) - Eds. Birwal, Goyal, et al. (Taylor & Francis/Apple Academic Press, 2021-2022)

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
FOOD PROCESSING TECHNOLOGIES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Food Processing Technologies	**4**	**2**	**0**	**2**		**Nil**

Learning Objectives

- Understand the basic scientific principles governing microbial inactivation and quality changes under different thermal, non-thermal, and low-temperature processing conditions.
- Analyze and determine the critical process parameters (e.g.,F, D, z values; pressure, time, electric field strength) required to achieve specific safety and quality targets.
- Identify the operational mechanics, advantages, and limitations of major food processing equipment used for preservation, concentration, and product transformation (e.g., retort, HPP UNIT, extruder).
- Evaluate the impact of various processing technologies on the nutritional, physicochemical, and sensory attributes of different food commodities.
- Apply the principles of smart processing, automation, and modeling to optimize energy efficiency and quality control in modern food production lines.

Learning Outcomes

The students would be able to:

- Critically differentiate between the mechanisms of microbial inactivation achieved by thermal (Pasteurization, Sterilization) and non-thermal (PEF, HPP) technologies.
- Calculate and validate the thermal process determination parameters (F,D, z values) for safe and effective canning/retort operations.
- Select and justify the appropriate processing technology (e.g., Freeze-drying vs. Dehydration vs. HPP) for a given food product to maximize quality retention and shelf-life.
- Design a simple cold chain management plan and explain the role of freezing kinetics in preserving the quality of frozen products.
- Demonstrate knowledge of how AI and Automation are integrated with emerging technologies (Ohmic, Microwave) to create smart and efficient processing environments.

THEORY
(Credits 2; Hours 30)

UNIT I: Thermal Processing Technologies 8 Hours

This unit focuses on the fundamental principles of heat transfer, microbial death kinetics, and engineering of established preservation, concentration, and product-shaping thermal methods.

- Pasteurization and Sterilization: Batch vs. Continuous systems (HTST, UHT).Effectiveness relative to target microorganisms (e.g., *C. botulinum*).
- Evaporation, Concentration, Dehydration: Single-effect vs. Multiple-effect evaporators. Drying kinetics (constant rate, falling rate periods).Air-drying (tray, fluidized bed), spray drying, drum drying.
- Retort Processing and Canning: Canning process flow sheet. Thermal process determination: D-value (Decimal Reduction Time), z-value (Thermal Resistance Constant), and F-value (Sterilizing Value) calculations.
- Baking and Extrusion Technologies: Principles of baking (heat and mass transfer).Extrusion cooking: Components, mechanics

UNIT II: Non-Thermal Technologies 7 Hours

This unit covers advanced preservation techniques utilizing pressure, electric fields, radiation, and separation methods to achieve microbial inactivation and selective component removal with superior quality retention.

- High-Pressure Processing (HPP): Principles of pressure effects on microbial membranes and enzymes. Equipment, process parameters (pressure, hold time), and applications.
- Pulsed Electric Fields (PEF): Mechanism of electroporation. Electric field strength, pulse width, and treatment time.
- Membrane Technologies (RO, UF, MF, Nano-filtration): Principle of operation (pressure gradient).Membrane pore size, flux, and applications in clarification and concentration.
- Ozone, UV Irradiation, Cold Plasma, Ultrasound: Mechanisms of microbial inactivation for each method, Applications in surface treatment and liquid processing.

UNIT III: Low Temperature Processing Technologies 7 Hours

This unit Explores preservation through temperature reduction, focusing on the physics of chilling and freezing, cold chain management, and the quality implications of ice formation and sublimation.

- Chilling Technology and Cold-Chain Management: Refrigeration cycle basics. Chillers (air blast, hydro-cooling). Importance of Time-Temperature Integrators (TTIs) in the cold chain.

- Freezing Kinetics and Freeze-Drying (Lyophilization): Freezing curves and the zone of maximum ice crystal formation. Impact of freezing rate on ice crystal size and texture. Freeze-Drying: Principle of sublimation, stages (freezing, primary, secondary drying).
- Cryogenic Freezing, IQF, and Thawing: Use of Liquid Nitrogen and CO_2, Individual Quick Freezing (IQF): Fluidized bed technology. Controlled thawing techniques and their effect on drip loss and quality.

UNIT IV: Emerging Processing Technologies 8 Hours

This unit describes the latest volumetric and highly controlled energy delivery technologies and their integration with Industry 4.0 concepts to create adaptive, efficient, and quality-driven smart food manufacturing systems.

- Ohmic Heating and Radiofrequency (RF) Heating: Principle of volumetric heating (Joule effect).Factors affecting conductivity and heating uniformity. Applications in particle-containing fluids.
- Microwave and Infrared Heating: Mechanism of heating. Penetration depth, surface heating, and rapid drying applications.
- Smart Processing: Automation, Modelling, and AI Applications: Process Automation and Sensors: In-line monitoring systems. CFD (Computational Fluid Dynamics) and other modeling techniques for process optimization (e.g., heat/mass transfer). Integration of Artificial Intelligence (AI) and Machine Learning for predictive maintenance, quality sorting, and adaptive control.

PRACTICAL
(Credits 2; Hours 60)

List of Experiments

1. Concept of Heat penetration and determination of F, D, z-values using laboratory retort.
2. Microwaving vs. boiling effect on texture and nutrient retention in vegetables.
3. Dehydration of fruits/vegetables using hot-air and infrared drying; rehydration ratio.
4. Freezing efficiency study using air-blast or household deep freezer: determination of freezing time, drip loss upon thawing, and evaluation of textural changes in selected fruits/vegetables.
5. High-pressure processing simulation using available demonstration tools/software.
6. Membrane filtration for juice clarification and performance efficiency evaluation.
7. FTIR/texture/rheological analysis of raw vs. processed samples.
8. Packaging and shelf-life modelling using water activity and microbiological parameters.
9. Industrial visit or virtual processing simulation & report submission

Essential Readings/ Suggested Readings

UNIT I

- Kent, N. L. (1994). *Technology of cereals* (4th ed.). Pergamon Press.

- Matz A Samuel, *Bakery Technology and Engineering*.
- Food Safety and Standards Authority of India. (2022). Food safety and testing manuals. Government of India.

UNIT II

- Chakraverty, A. (2001). *Post-harvest technology of cereals, pulses and oilseeds* (3rd ed.). Oxford & IBH Publishing Co. Pvt. Ltd.
- Manay, S. and Sharaswamy, M. (1987). Food Facts and Priniciples. Wiley Eastern Publisher.

UNIT III

- Wills, R., McGlasson, B., Graham, D., Joyce, D., & Geeson, J. (2007). *Postharvest: An introduction to the physiology and handling of fruit and vegetables* (5th ed.). CABI Publishing.
- Salikhe D K and Kadam SS (1995) *Handbook of fruit science and technology. Production Composition, Storage and processing*. Marcel Decker inc, New York

UNIT IV

- Siddapa, GS (1986) *Preservation of Fruits and Vegetables*, ICAR Publication
- Srivastava, R. P., & Kumar, S. (1998). *Fruit and vegetable preservation: Principles and practices* (3rd ed.). CBS Publishers & Distributors.
- Salikhe D K and Kadam SS (1995) *Handbook of fruit science and technology. Production Composition, Storage and processing*. Marcel Decker inc, New York

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

CLINICAL SPORTS NUTRITION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Clinical Sports Nutrition	4	2	0	2		**NIL**

Learning Objectives

- To understand the nutritional requirements for athletes with clinical conditions, special conditions and special dietary needs.
- To develop skills for fulfilling dietary considerations for athletes with clinical conditions, special conditions and special dietary needs.

Learning Outcomes

- The competency of providing suitable dietary modifications for various clinical conditions of sports persons.
- Competency of providing guidelines and dietary monitoring of sports persons with various clinical conditions to enable enhanced performance.

THEORY

(Credits 2; Hours 30)

UNIT I: Athletes with Nutrition related disorders 7 Hours

This unit deals with the nutritional intake of athletes with Diabetes Mellitus, Anemias and gastrointestinal disorders.

- **Diabetes Mellitus:** Problems of athletes with Type-1 diabetes and cardiovascular diseases; Medical Nutrition Therapy (MNT) for athletes with Type-1 diabetes and cardiovascular disease; dietary guidelines and nutrient timing; type of carbohydrate and timing; pre and post event carbohydrate loading and fluids; insulin adjustments for athletes with Type-1

diabetes; special problems for athletes with Type-1 diabetes and cardiovascular disease; complications with poorly controlled diabetes.

- **Anaemias in Sports:** Definition and description; causes and consequences; physiological effects of exercise; pathophysiology; Medical Nutrition Therapy.
- **Athletes with gastrointestinal(GI) disorders, food allergies and food intolerance:** GI disturbance occurring in some athletes before, during and after competition and training; excessive flatulence; abdominal distention; intermittent diarrhoea; constipation; Food Related Adverse Reactions (FRAR); physiological and dietary factors affecting gastric emptying and gut comfort; gut trainability; lower GI tract conditions; Irritable Bowel Syndrome(IBS); low Fermentable Oligosaccharides, Disaccharides, Monosaccharides & Polyols (FODMAP) diet for IBS; Composition, food sources of FODMAP and pattern of consumption; Celiac disease (Diagnosis and treatment); Inflammatory Bowel Disease (IBD)-Diagnosis, Nutrition related concerns for athletes with untreated IBD; Medical Nutrition Therapy.

UNIT II Nutrition for Sports injuries 9 Hours

In this unit students learn about the appropriate nutritional intake of athletes for recovery from injuries and management of paralympic athletes.

- **Sport injury and rehabilitation**: Type of injury and rehabilitation required, physiological and metabolic changes during injury and rehabilitation; eating habits commonly followed during an injury; overweight among injured athletes; role of nutrition and dietary guidelines in recovery from an injury; common injuries among athletes-Maxillofacial fractures, knee injury, Anterior Cruciate Ligament (ACL) tear, Patellofemoral syndrome, Tennis elbow, Ankle sprain, Groin pull, Hamstring sprain.
- **The Paralympic Athlete:** Athletes with physical or intellectual impairments (Classification and associated risk for injury or health outcomes); Body composition assessment and management; Eating difficulties and behaviours observed in some athletes with impairments.
- **Paralympic athletes and nutritional demands:** Dietary intakes and potential issues; reported dietary intakes; fibre timing of food intake and bowel control; fluid intake; medicine requiring Therapeutic Use Exemption (TUE) under World Anti-Doping Agency (WADA); Use of vitamin, mineral or sports supplement; travelling with paralympic athletes.

UNIT III Nutrition for athletes with special dietary needs 8 Hours

This unit explores nutritional challenges for children, female, and vegetarian athletes, focusing on growth, energy needs, and dietary guidelines for performance.

- **Children and adolescent athletes:** Nutritional issues commonly faced; eating habits and addiction; nutritional requirements for growth and training.
- **Female athletes:** Vulnerability to nutrition assault and insufficiency; differences in fuel or nutrient utilisation among female athletes; female athletic triad (FAT) including eating disorder, menstrual irregularity and poor bone mineral density and RED-S (Relative Energy Deficiency in Sport); energy availability-definition and its association with FAT and RED-S; assessment for RED-S; dietary guidelines and suggestions for RED-S; dietary guidelines and suggestions for pregnant and lactating female athletes.
- **Vegetarian athletes:** Classification; nutritional status and dietary considerations; nutritional gaps currently identified and suitable dietary modification for fuelling during training, competitions and traveling.

UNIT IV: Medical and Nutritional Issues for the Travelling Athlete 6 Hours

This unit addresses the nutritional challenges of traveling athletes, focusing on environmental monitoring, food safety, hydration, illness prevention, and adherence to dietary guidelines for optimal performance.

- Nutritional problems often faced by the travelling athletes; monitoring and documentation of climate, time zones, altitude, food safety and availability by the support staff or nutritionist;
- Market surveys and research support for the journey (travel, accommodation, catering, training and event schedules); noting vaccination and existing allergies; hydration and supplements for travel within country and overseas;
- Strategies for meeting dietary guidelines while traveling and follow up.

PRACTICAL

(Credits 2; Hours 60)

1. Planning a diet and important points for counselling for an athlete with:
    - Diabetes Mellitus;
    - Anaemia;

- Food-Related Adverse Reactions;
- Sports injury.

2. Planning a diet and enlisting other important aspects of dietary management of a Paralympic athlete.
3. Planning a diet for vegetarian athletes; enlisting aspects of follow up.
4. Preparing a handout for dietary support during traveling, including fluid intake strategies and.
5. Assessing athletes at risk of eating disorders using EAT -26

Essential Readings

UNIT I

- Burke, Louise, and Vicki Deakin. (2015). *Clinical sports nutrition*. McGraw-Hill.
- Jeukendrup, A., & Gleeson, M. (2019). Sport nutrition (3rd ed.). Human Kinetics.
- Jeukendrup, A. (2017). *Training the gut for athletes*. Sports Science Exchange, 28(165), 1–6.
- Bhatia, T. K., Bhatia, J., & Aryadeep. (2022). *An entity called sports anemia: Does it really exist or is a misnomer: A systematic review of existing literature*. *GMC Patiala Journal of Research and Medical Education*, 5(01), 25–33. https://www.jrme.gmcpatiala.edu.in/index.php/j/article/view/94
- Manna, I. (2020). *Study of iron status of Indian female athletes*. *Journal of Cardiovascular Disease Research*, 11(4). https://jcdronline.org/index.php/JCDR/article/view/1204 Retrieved from https://www.gssiweb.org/en/sports-science-exchange/article/training-the-gut-for-athletes
- Cannata, F., Vadalà, G., Ambrosio, L., Papalia, R., & Napoli, N. (2020). *Nutritional therapy for athletes with diabetes*. *Journal of Functional Morphology and Kinesiology*, 5(4), 83. https://doi.org/10.3390/jfmk5040083 PMC

UNIT II

- Burke, Louise, and Vicki Deakin. (2015). *Clinical sports nutrition*. McGraw-Hill.
- Broad, E. (Ed.). (2014). Sports Nutrition for Paralympic Athletes. CRC Press.
- Chowdhery, A., Agarwal, A., & Saini, A. (2025). *Prevalence of sports injuries among athletes in the Lucknow region: A cross-sectional study*. *Cureus*, 17(8), e90266. https://pubmed.ncbi.nlm.nih.gov/40964569/

UNIT III

- Burke, Louise, and Vicki Deakin. (2015). *Clinical sports nutrition*. McGraw-Hill : Chapter 18, Nutritional issues for young athletes: children and adolescents.

- Burke, Louise, and Vicki Deakin. (2015). *Clinical sports nutrition*. McGraw-Hill : Chapter 24, Special Populations: Section: Travelling Athletes

UNIT IV

- Burke, Louise, and Vicki Deakin. (2015). *Clinical sports nutrition*. McGraw-Hill : Chapter 24, Special Populations: Section: Travelling Athletes

Suggested Reading

- Campbell, B. (Ed.). (2013). Sports nutrition: enhancing athletic performance. CRC Press.
- Larson-Meyer, D. E. (2007). Vegetarian sports nutrition. Human Kinetics.
- Marie Dunford. (2017) Nutrition for Sport and Exercise.
- Jeukendrup, Asker. (2017). Training the Gut for Athletes. Sports Medicine. 47. 10.1007/s40279-017-0690-6.

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

DISCIPLINE SPECIFIC ELECTIVE

DOPING, SUPPLEMENTS AND ERGOGENIC AIDS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Doping, Supplements and Ergogenic Aids	**4**	**3**	**0**	**1**		**NIL**

Learning Objectives

- To gain understanding of the various supplements used for performance enhancement in
- To build knowledge on the drugs used in sports and the nodal bodies for controlling doping.

Learning Outcomes

- Student will gain competence towards guiding the athlete on supplements for sports performance.
- Students will be able to understand doping control practices and assist athletes towards preventing use of banned drugs.

THEORY
(Credits 3; Hours 45)

UNIT I: Doping in Sports 12 Hours

This unit develops a basic understanding of Drugs used for performance enhancement and the Basic Acts for protection

- Doping in sports: Definition of Doping
- Categories of banned drugs in sports
- Anti-doping framework
- Role of WADA and NADA

UNIT II: Ergogenic Aids and Macronutrient Supplements 10 Hours

This unit deals with Usage of Macro-nutrients as supplements for performance enhancement in Sports.

- **Dietary supplements:** Definition and classifications; Ergogenic aids: Definitions and Classifications; Dietary Supplement Health and Education Act of 1994; Government Protections from Dietary Supplement Hazards and Risks;
- **Carbohydrate Supplements:** Carbo-loading, Sports Drinks, Bars and Gels.
- **Fat Supplements:** Omega Fatty acids, Medium Chain Triglycerides, Fish Oils.

UNIT III: Micronutrient Supplements for performance enhancement 11 Hours

In this unit students will gain knowledge on the usage of Micro-nutrients as supplements for performance enhancement in Sports.

- **Vitamin Supplements:** B-Complex Vitamins, Vitamin C, Vitamin D, Vitamin E Supplements, Multi-Vitamin Supplements.
- **Mineral Supplements:** Calcium-Magnesium, Iron Supplements, Chromium, Zinc.
- **Antioxidants Supplements:** Endogenous and Exogenous Antioxidant Supplements.

UNIT IV: Metabolite and Botanical Ergogenic Supplements 12 Hours

In this unit students learn about various botanical supplements used for performance enhancement and the common metabolites in use by athletes to gain performance.

- **Botanical Ergogenic Supplements:** Wheat Germ oil, Beetroot, Green Tea Extract, Tart Cherries, Caffeine, Curcumin, Phytosterols, Bio Flavonoids, Ashwagandha, Trifla, Rhodiola, Shilajit, Ginseng, Grape Seed Extract, Resveratrol, Chyawanprash, Herbal Testosterone-Boosters (Eg. Tribulus Terristris, Nettle Root, Long Jack Root Etc), Bitter Orange (Citrus aurantium), Capsaicin, White Kidney Bean (Phaseolus vulgaris), Garcinia Cambogia (Hydroxycitric Acid), Guar Gum, and Psyllium, Glucomannan.
- **Metabolite Ergogenic Supplements:** Beta-Alanine, L-Carnitine Co Enzyme Q 10, Creatinine, DHEA, NADH, Glycerol, Inosine, Melatonine, Gamma Oryzanol (Ferurates), Glucosania, Alcohol, Adoptogens, Alkalinizers, Androstenedione, HMB.

PRACTICAL

(Credit 1; Hours 30)

1. Market survey of supplements available in Indian market for performance enhancement
2. Development and standardisation of a sports bars or meal replacement bars.

3. Composition and brand names of supplements that improve Muscle mass commonly available in the market and role of nutrients listed in athletic performance.
4. Composition and brand names of Carbohydrate supplements; Protein supplements; Fat supplements; Micronutrient-supplements; metabolite supplements; and botanical supplements commonly available in the market.
5. Planning a diet for strength athletes with supplements for muscle building.
6. Planning a diet for endurance athletes with supplements for energy and micronutrients.
7. Providing diet for clinical conditions with supplement usage (Planning the type, quantity and timing of supplement intake).

Essential Readings

UNIT I:

- Sharma, S. K., et al. (2024). *Examining doping violations among Indian women in sports*. *ShodhKosh: Journal of Visual and Performing Arts*, 5(1). Retrieved from https://www.granthaalayahpublication.org/Arts-Journal/ShodhKosh/article/view/5114 Granthaalayah Publication

- *A critical analysis of the impact of doping in sports domain*. (2021). *International Journal of Law Management & Humanities*. Retrieved from https://ijlmh.com/paper/a-critical-analysis-of-the-impact-of-doping-in-sports-domain/

- World Anti-Doping Agency. (2025). *The Prohibited List*. https://www.wada-ama.org/en/resources/world-anti-doping-code-and-international-standards/prohibited-list
- Pal, Atul. (2025). A review of doping in sports: India and the world. Sports law, policy & diplomacy journal. 3. 71-88. 10.30925/slpdj.3.1.5.
- WADA official website https://www.wada-ama.org/en

UNIT II:

- TrueSport. (n.d.). *Nutrition Guide: Fueling for performance* [PDF]. TrueSport / U.S. Anti-Doping Agency (USADA). https://learn.truesport.org/wp-content/uploads/Nutrition-Guide.pdf
- Antonio, J., Kalman, D., Stout, J. R., Greenwood, M., Willoughby, D. S., & Haff, G. G. (2008). *Essentials of sports nutrition and supplements*. Humana Press

UNIT III:

- Maughan, R. J. (Ed.). (2008). Nutrition in sport (Vol. 7). John Wiley & Sons.

UNIT III:

- Vedula G.S., Dietary Supplements and Nutraceuticals (pdf from ResearchGate) 2025. Publisher: Notion Press; ISBN: 9798897247493

UNIT IV:

- Castell, L. M., Stear, S. J., & Burke, L. M. (Eds.). (2015). *Nutritional supplements in sport, exercise and health: An A-Z guide* [PDF]. Retrieved from https://vdoc.pub/documents/nutritional-supplements-in-sport-exercise-and-health-an-a-z-guide-5np38amoqp70
- Maughan, R. J., et al. (2018). *Herbal medicine for sports: A review*. *Journal of the International Society of Sports Nutrition, 15*, Article 14. https://jissn.biomedcentral.com/articles/10.1186/s12970-018-0218-y
- Slater, G., & Jenkins, D. (2006). *Dietary supplements and sports performance: Metabolites, constituents, and extracts*. *Journal of the International Society of Sports Nutrition, 3*, Article 2. https://jissn.biomedcentral.com/articles/10.1186/1550-2783-3-2-1

Suggested Readings

- Ryan, M. (2012). Sports nutrition for endurance athletes. Velo Press.
- Raven, P., Wasserman, D., Squires, W., & Murray, T. (2012). Exercise Physiology: An Integrated approach. Nelson Education.
- Ehrman, J. K., Kerrigan, D., & Keteyian, S. (2017). Advanced Exercise Physiology: Essential Concepts and Applications. Human Kinetics.
- McArdle, W. D., Katch, F. I., & Katch, V. L. (2015). Exercise physiology: nutrition, energy, and human performance. 8th Edition, Lippincott Williams & Wilkins.

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

COURSE IN RESEARCH METHODOLOGY

TECHNIQUES OF RESEARCH WRITING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course
		Lecture	Tutorial	Practical		
Techniques of Research Writing	2	2	0	0	As per admission policy	Should have studied Advanced Research Methodology and Tools for Research

Learning Objectives

- Comprehend and apply principles of academic writing for research
- Understand the concept of plagiarism and adopt strategies to avoid plagiarism.
- Learn and use different citation styles and effectively utilize reference management tools.
- Outline the process of writing, publishing, and presenting research.
- Avoid common errors in academic writing.

Learning Outcomes

After completing the course, students will be able to:

- Structure and organize major scholarly works according to disciplinary standards.
- Master the principles of academic writing and non-plagiaristic expression.
- Employ visualization techniques to effectively communicate complex research findings and data patterns.
- Apply citation styles and formatting requirements meticulously to produce publication-ready manuscripts.

THEORY
(Credits 2; Hours 30)

UNIT I: The Foundations and Structure of a Research Manuscript 18 Hours

This unit covers the essentials of clear, concise, and formal academic writing, ethical practices including plagiarism avoidance, effective idea organization, and responsible use of AI tools in research. This unit also guides students through crafting a complete research manuscript, including introduction, methodology, results, discussion, and conclusions, with emphasis on accurate data presentation, visualization, and proper manuscript formatting.

- Academic Writing principles and organization of ideas
- Plagiarism types, use of plagiarism-checking software & interpretation of plagiarism reports.
- Academic writing frameworks: IMRAD (Introduction, Methods, Results, Discussions) Structure and the TEEC (Topic sentence, Evidence, Explanation, Conclusion) Structure
- Ethical use of AI in academic writing
- Data Visualization: Principles, Types and Tools

UNIT II: Citation, Reference Management, Publication and Presentation of Research 12 Hours

The unit focuses on mastering citation styles, managing references using software tools, and conducting efficient literature searches using databases and advanced search strategies. The unit further explores journal selection, ethical publishing practices, research paper writing, and the creation and delivery of effective presentations and posters for diverse academic audiences.

- Citation Management & formatting guidelines: Detailed application of specific styles (e.g., APA 7th, MLA, Chicago, Vancouver), managing in-text citations, citation index.
- Reference Management Software (RMS): Zotero, Mendeley and other citation tools; searching specialized databases (e.g., Scopus, Web of Science, ScienceDirect);
- Databases and Search Strategy- Key search terms, Boolean operators, PRISMA diagram
- Types and Selection of Journals: Predatory journals, Cloned journals; Open access and Paid Journals; Impact Factor and other metrics of Journals
- Research Paper writing and publishing in peer-reviewed journals, understanding journal-specific guidelines.
- Formulating and Presenting a Research Poster

- Presentation Skills: Creating effective slides, summarizing complex findings for different audiences, and managing Q&A sessions.

Essential Readings:

UNIT 1

This unit introduces the essential principles of scholarly writing required for academic research. It focuses on developing clarity, precision, and coherence in written work while maintaining an appropriate academic tone. This unit also familiarizes students with accurate citation practices and systematic reference management in academic writing. Further, the unit covers the correct presentation of tables, figures, and overall manuscript formatting in line with journal and institutional requirements. Students will gain practical skills necessary for producing professionally structured research documents.

- American Psychological Association. (2020). *Plagiarism* (7th ed.). APA Style. https://apastyle.apa.org/style-grammar-guidelines/citations/plagiarism
- American Psychological Association. (2020). *Sample tables* (7th ed.). APA Style. https://apastyle.apa.org/style-grammar-guidelines/tables- figures/sample-tables
- American Psychological Association. (2023). *Citing generative AI in APA Style: Part 1—Reference formats*. APA Style Blog. https://apastyle.apa.org/blog/cite-generative-ai-references
- Thomas, C. George (2021) Research Methodology and Scientific Writing (2nd ed.) Springer Nature

UNIT II

This unit focuses on the organization and presentation of a complete research report/document. Students will learn how to write each section of a research manuscript clearly and logically. The unit focusses on the processes involved in publishing and presenting research work. It covers the selection of appropriate journals, awareness of unethical publishing practices, the basics of writing for peer-reviewed publications, effective research presentation skills, including poster preparation and oral presentations

- American Psychological Association. (2020). *Response to reviewers* (7th ed.). APA Style. https://apastyle.apa.org/style-grammar-guidelines/research-publication/response-reviewers
- American Psychological Association. (2020). *Heading levels* (7th ed.). APA Style. https://apastyle.apa.org/style-grammar-guidelines/paper- format/heading-levels
- Hamilton College. (n.d.). *How to write an APA research paper*. https://www.hamilton.edu/academics/centers/writing/writing-resources/how-to-write-an-apa-research-paper

- Montclair State University. (2021). *How to prepare your dissertation in APA Style*. https://www.montclair.edu/graduate/wp-content/uploads/sites/58/2021/01/DISSERTATION-GUIDELINES-FOR-APA-STYLE-1-2021.pdf
- Tullu, M. S., & Karande, S. (2017). *Writing a model research paper: A roadmap*. *Journal of Postgraduate Medicine*, *63*(3), 143–146. https://doi.org/10.4103/jpgm.JPGM_325_17

Suggested Readings:

- AME Publishing Company. (2022). *Discussion and conclusion*. https://cdn.amegroups.cn/journals/vats/files/journals/27/articles/4955/public/4955-PB1-8866-R1.pdf?filename=amj-04-26.pdf
- McLeod, S. (2023). *How to write a methods section for a psychology paper*. Very well Mind. https://www.verywellmind.com/how-to-write-a-method- section-2795726

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

Annexure-14

UNIVERSITY OF DELHI

University of Delhi

Faculty of Science

Department of Home Science

1-Year M.Sc. Food and Nutrition Coursework Track

Course Credit Structure and Curriculum- NEP 2025

1-Year M.Sc (FOOD AND NUTRITION)

Introduction:

The Department of Home Science offers a 1- year M.Sc. Food and Nutrition, to the 4 -year graduates of B.Sc Home Science, Food and Nutrition specialisation, of University of Delhi. The programme covers key advanced aspects in three areas of specialization namely, Clinical Nutrition, Public Health Nutrition and Food Science and Processing. The programme endeavours to train a cadre of professionals who can create nutrition awareness for promotion of healthy lifestyle among the population. The courses of this programme have been designed to enhance the core competency of students in the fields of public health nutrition, dietetics and food science. The curriculum provides a strong theoretical base and includes experiential learning through field placements and practical.

In addition to strengthening the advanced knowledge base, the programme aims to strengthen the research acumen of students who have developed a strong base in Food, Nutrition and Dietetics, to enable them to develop into academicians and researchers in the field of food science, nutrition and dietetics.

Programme Specific Objectives:

The objectives of M.Sc. Food and Nutrition programme are:

- To apply the understanding of the concepts of biochemistry, food chemistry, food microbiology, methods of assessing human nutritional requirements, nutritional assessment and diet planning in laboratory setting as per standard methods in the above-mentioned areas
- To understand the applications of nutritional sciences in clinical interventions communication for health promotion, food service management, food science and processing
- To improve understanding and develop skills to participate in planning, management and monitoring of public health nutrition programmes implemented by the government.
- To acquire skills to undertake systematic research in the area of food science, clinical nutrition and public health nutrition

Programme Specific Outcomes:

After completing this programme the student will be able to:

- Assess nutritional status and plan appropriate diets.
- Use the knowledge of nutritional sciences in clinical interventions and communication for health promotion
- Work as food scientists, quality assurance managers and analysts.
- Manage a food service establishment
- Apply theoretical concepts and practical training for research in the field of food science, clinical nutrition and public health nutrition

Program Structure 1: M.Sc. FN : Coursework Track

Semester	Core Courses		Elective Courses		Skill Based Courses		Total Credits
	No. of Courses	Total Credits	No. of Courses	Total Credits	No. of Courses	Total Credits	
I	2	8	3	12	1	2	**22**
II	2	8	3	12	1	2	**22**
Total Credits for the Course	**16**		**24**		**4**		**44**

List of Courses to be offered to students opting for Structure-1 (Coursework) of M.Sc. in 1st and 2nd Semester of One- year course

Type of Course	Course No.	Semester	Course Title	Credits for each Course			
				Theory	Tutorial	Practical	Total
SEMESTER I							
Discipline Specific Core Course	DSC 1	I	Analytical Techniques and Instrumentation	2	0	2	4
Discipline Specific Core Course	DSC 2	I	Nutritional Epidemiology	3	0	1	4
Discipline Specific Elective Course	DSE 1	I	Statistics and Data Management (From the common Home Science pool)	As per the specific course			4
Discipline Specific Elective Course	DSE 2	I	Medical Nutrition Therapy	As per the specific course			4
Discipline Specific Elective Course	DSE 3	I	Institutional Food Service management	As per the specific course			4
			Social and Cultural Aspects in Public Health Nutrition				
			Improving Maternal, Infant, Young Child and Adolescent Nutrition				
			Animal Products Processing and Preservation				
			Unit Operations in Food Processing				
			Exercise, Nutrition and Metabolism				
			Sport-Specific Nutrition				
General Elective Course (*Can be opted for in place 1 DSE course)	GE 1	I	Parenting in Contemporary India	As per the specific course			4
			Resources and Sustainability				
			Organisational Communication: Tools and Techniques				
			Lifestyle Modifications for Optimal Health				
			Community Nutrition Assessment				
			Dyeing and Printing with Natural Dyes				
			Appreciation of Indian Textiles				
Skill Based Course	SBC 1	I	Nutrition Screening and Assessment	0	0	2	2

			Food Business Management				
			Internship-1				
SEMESTER II							
Discipline Specific Core Course	DSC 3	II	Food Product Development and Quality Evaluation	2	0	2	4
Discipline Specific Core Course	DSC 4	II	Nutrition Communication and Health Promotion	3	0	1	4
Discipline Specific Elective Course	DSE 4	II	Precision Nutrition	As per the specific course			4
			Challenges in Clinical Nutrition				
Discipline Specific Elective Course	DSE 5	II	Nutritional Care of the Elderly	As per the specific course			4
Discipline Specific Elective Course	DSE 6	II	Programme Planning in Public Health Nutrition	As per the specific course			4
			Plant Products Processing and Preservation				
			Food Processing Technologies				
			Clinical Sports Nutrition				
			Doping, Supplements and Ergogenic Aids				
General Elective Course (*Can be opted for in place 1 DSE course)	GE 2	II	Parenting in Contemporary India	As per the specific course			4
			Resources and Sustainability				
			Organisational Communication: Tools and Techniques				
			Lifestyle Modifications for Optimal Health				
			Community Nutrition Assessment				
			Dyeing and Printing with Natural Dyes				
			Appreciation of Indian Textiles				
Skill Based Course	SBC 2	II	Nutrition and Health Data Visualisation	0	0	2	2
			Scientific Writing Skills				

			Intellectual Property Rights	1	0	1	2
			Bioinformatics for Food and Nutrition				
			Internship-2				

List of PGCF courses of M.Sc. Food and Nutrition (Coursework)
(Semester I and II of the One-year programme)

Pool of Discipline Specific Elective Courses offered in Semester I					
		Credits for each Course			
		Theory	Tutorial	Practical	Total
i.	Statistics and Data Management (From the common Home Science pool)	3	0	1	4
ii.	Medical Nutrition Therapy	3	0	1	4
iii.	Institutional Food Service management	2	0	2	4
iv.	Social and Cultural Aspects in Public Health Nutrition	3	0	1	4
v.	Improving Maternal, Infant, Young Child and Adolescent Nutrition	2	0	2	4
vi.	Animal Products Processing and Preservation	3	0	1	4
vii.	Unit Operations in Food Processing	2	0	2	4
viii.	Exercise, Nutrition and Metabolism	3	0	1	4
ix.	Sport-Specific Nutrition	2	0	2	4
Pool of Discipline Specific Elective Courses offered in Semester II					
		Credits for each Course			
		Theory	Tutorial	Practical	Total
x.	Precision Nutrition	3	0	1	4
xi.	Challenges in Clinical Nutrition	2	0	2	4
xii.	Nutritional Care of the Elderly	3	0	1	4
xiii.	Programme Planning in Public Health Nutrition	2	0	2	4
xiv.	Plant Products Processing and Preservation	3	0	1	4
xv.	Food Processing Technologies	2	0	2	4
xvi.	Clinical Sports Nutrition	2	0	2	4
xvii.	Doping, Supplements and Ergogenic Aids	3	0	1	4

Pool of General Elective Courses offered by the Department of Home Science				
	Credits for each Course			
	Theory	Tutorial	Practical	Total
i. Parenting in Contemporary India	3	1	0	4
ii. Resources and Sustainability	3	1	0	4
iii. Organisational Communication: Tools and Techniques	3	1	0	4
iv. Lifestyle Modifications for Optimal Health	3	1	0	4
v. Community Nutrition Assessment	3	1	0	4
vi. Dyeing and Printing with Natural Dyes	3	0	1	4
vii. Appreciation of Indian Textiles	3	1	0	4
Pool of Skill Based Courses offered in Semester I				
	Credits for each Course			
	Theory	Tutorial	Practical	Total
i. Nutrition Screening and Assessment	0	0	2	2
ii. Food Business Management	0	0	2	2
iii. Internship-1	0	0	2	2
Pool of Skill Based Courses offered in Semester II				
	Credits for each Course			
	Theory	Tutorial	Practical	Total
iv. Nutrition and Health Data Visualisation	0	0	2	2
v. Scientific Writing Skills	0	0	2	2
vi. Intellectual Property Rights	1	0	1	2
vii. Bioinformatics for Food and Nutrition	0	0	2	2
viii. Internship-2	0	0	2	2

SEMESTER -I

DISCIPLINE SPECIFIC CORE COURSE
Analytical Techniques and Instrumentation

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Analytical Techniques and Instrumentation	**4**	**2**	**0**	**2**		**Nil**

Learning Objectives:

- To understand the fundamental principles, instrumentation, and working mechanisms of major spectroscopic techniques, including UV–Visible spectroscopy, CD spectroscopy, fluorescence spectroscopy, AAS, and flame photometry.
- To develop conceptual and practical knowledge of centrifugation techniques, including sedimentation behavior, types of centrifuges, and their applications in biomolecule separation.
- To understand the principles and operational methods of major chromatographic techniques such as paper chromatography, TLC, ion exchange, molecular sieve, affinity, reverse phase chromatography, HPLC, and FPLC.
- To learn the principles of electrophoretic separation and gain familiarity with techniques such as PAGE (native), SDS-PAGE, agarose gel electrophoresis, isoelectric focusing, and 2-D gel electrophoresis.
- To acquire basic understanding of mass spectrometry, MALDI-TOF, NMR, DSC, and XRD, along with their applications in structural and functional analysis of biomolecules.
- To develop laboratory skills in buffer preparation, spectrophotometric analysis, chromatographic separations, protein estimation, and electrophoretic techniques.

Learning Outcomes:

- Students will understand the principles, instrumentation, and analytical applications of major spectroscopic, electrophoretic, and mass-based techniques.
- Students will be able to apply centrifugation and chromatography methods for separation, purification, and characterization of biomolecules.
- Students will interpret analytical data generated from UV-Vis, fluorescence, CD, AAS, chromatography, electrophoresis, MS, NMR, DSC, and XRD techniques.
- Students will perform key laboratory procedures including buffer preparation, λmax determination, protein estimation, chromatographic separation, and SDS-PAGE.
- Students will develop technical competence and analytical reasoning required for

biochemical and biotechnological laboratory investigations.

THEORY
(Credits 2; Hours 30)

UNIT I: Spectroscopic Techniques **9 Hours**

In this unit students will learn about principles and working of key spectroscopic techniques

- Principle and working of UV-visible absorption spectrophotometry, Beer-Lambert law, Applications of UV-visible absorption spectrophotometry,
- Working and Applications of CD-spectroscopy
- Fluorescence spectrophotometry and its applications
- Atomic Absorption Spectroscopy
- Flame Photometry.

UNIT II: Separation Techniques- Centrifugation & Chromatography **11 Hours**

In this unit students will learn about principles and application of centrifugation and chromatography

- Principle of centrifugation, Sedimentation coefficient, Factors affecting sedimentation, Various types of centrifuges: Analytical ultracentrifugation, Differential centrifugation, Density gradient centrifugation- Zonal and isopycnic, Application of centrifugation.
- Introduction to chromatography, Principles and applications of Paper Chromatography, Thin Layer Chromatography, Ion Exchange Chromatography, Molecular Sieve Chromatography and Affinity Chromatography, Reverse Phase Chromatography, High Performance Liquid Chromatography (HPLC), Fast Protein Liquid Chromatography (FPLC).

UNIT III: Electrophoresis **4 Hours**

In this unit students will learn about principles and application of electrophoresis

- Principle of electrophoresis
- Polyacrylamide gel electrophoresis (Native)
- SDS PAGE
- Agarose gel electrophoresis
- Isoelectric focusing of proteins
- 2-D Gel electrophoresis and its application.

UNIT IV: Mass Spectrometry **6 Hours**

In this unit students will learn about principles and application of Mass spectrometry

- Principle and applications of mass spectrometry
- MALDI-TOF
- Nuclear magnetic resonance (NMR)
- Differential scanning calorimetry (DSC)
- X-ray diffraction (XRD).

PRACTICAL
(Credits 2; Hours 60)

1. Preparation of acidic and basic buffer.
2. Determination of absorption maxima (λmax).
3. Estimation of protein concentration by UV and Biuret method.
4. Preparation of cell free extract.
5. Separation of amino acid acids by TLC/paper chromatography.
6. Separation of proteins by Gel filtration chromatography/Ion-exchange chromatography.
7. Demonstration of SDS-PAGE.

Essential Readings:

UNIT I

- Kemp, W. (2022). *Organic spectroscopy*. Bloomsbury Publishing India Pvt. Ltd.; ISBN: 9789394701250.
- Freifelder, D. (1982) *Physical Biochemistry: Applications to Biochemistry and Molecular Biology*, (2 nd ed.), W.H. Freeman and Company (New York); ISBN:0-7167- 1315-2 / ISBN:0-7167-1444-2.
- Mohan, J. (2009). *Organic spectroscopy: principles and applications*. Narosa Publishing House; ISBN: 978-8173195662.

UNIT II

- Katoch, R. (2011). *Analytical techniques in biochemistry and molecular biology*. Springer Science & Business Media.; ISBN: 978-1-4419-9784-5.
- Wilson, K. & Walker J (2010) *Principles and Techniques of Biochemistry and Molecular Biology*, (7 th ed.), Cambridge University Press; ISBN: 978-0-521-51635-8.
- Boyer, R. F. (2012) *Biochemistry Laboratory: Modern Theory and Techniques*, (6 th ed.), Boston, Mass: Prentice Hall; ISBN-13: 978-0136043027.

UNIT III

- Katoch, R. (2011). *Analytical techniques in biochemistry and molecular biology*. Springer Science & Business Media.; ISBN: 978-1-4419-9784-5.
- Wilson, K. & Walker J (2010) *Principles and Techniques of Biochemistry and Molecular Biology*, (7 th ed.), Cambridge University Press; ISBN: 978-0-521-51635-8.
- Boyer, R. F. (2012) *Biochemistry Laboratory: Modern Theory and Techniques*, (6 th ed.), Boston, Mass: Prentice Hall; ISBN-13: 978-0136043027.

UNIT IV

- Shah, V., Patel, T., & Patel K. (2025) *Instrumental Methods of Analysis*, Shaswat Publication; ISBN: 978-93-6087-858-0.
- Kemp, W. (2022). *Organic spectroscopy*. Bloomsbury Publishing India Pvt. Ltd.; ISBN: 9789394701250.
- Mohan, J. (2009). *Organic spectroscopy: principles and applications*. Narosa Publishing House; ISBN: 978-8173195662.

Suggested Readings:

- Cooper, T. G. (2011) *The Tools of Biochemistry* (2nd ed.), Wiley-Interscience Publication (New Delhi); ISBN: 13:9788126530168.
- Plummer D. T., (2015) *An Introduction to Practical Biochemistry*. 3rd ed., Tata McGraw Hill

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

DISCIPLINE SPECIFIC CORE COURSE
NUTRITIONAL EPIDEMIOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Nutritional Epidemiology	4	3	0	1		Nil

Learning Objectives

- To understand the basic epidemiological concepts and their application in nutritional epidemiology.
- To understand the principles of disease causation with emphasis on modifiable environmental factors including dietary factors.
- To comprehend the effect of measures of dietary exposure and nutrition related health outcomes on determination of diet-disease relationship.
- To understand the application of epidemiology in prevention of disease and promotion of health through nutrition.

Learning Outcomes

The students would be able to:

- Illustrate the epidemiological approach to defining and measuring occurrence of nutrition and health related conditions in population
- Describe major study designs in nutritional epidemiology and select an appropriate design for addressing a study question.
- Explain implication of study design and methods of diet and nutritional status assessment in interpreting studies in nutritional epidemiology
- Develop tool(s) for assessment of any specific dietary exposure in a population group
- Demonstrate the knowledge of epidemiological approach to causation
- Explain the role of epidemiological research in improving health and nutritional status

THEORY
(Credits 3; Hours 45)

UNIT I: Basic Concepts and Methods in Epidemiology **13 Hours**

This unit deals with principles of epidemiology and epidemiological methods. It focuses on various study designs as well as potential errors in epidemiological studies.

- Definition, scope and purpose of epidemiology

- Basic measurements in epidemiology-Measurement of mortality, morbidity and disability - rates, ratios and proportions
- Epidemiologic study methods- design, steps in conducting the studies, data analysis and interpretation
  - Observational epidemiology- descriptive and analytical studies - ecological, cross sectional, case-control and cohort
  - Experimental epidemiology- experimental and quasi experimental trials, randomized control trials, field trials and community trials
- Association and causation in epidemiology
- Potential errors in epidemiologic studies
  - Sampling and non-sampling errors
  - Sources of measurement errors
- Precision and validity of measurements in epidemiology

UNIT II: Epidemiologic Approaches to Diet-Disease Relationships 17 Hours

This unit highlights the epidemiological principles in understanding role of nutrition in human health and/or disease. It also deals with the role of gene-diet interactions in understanding diet-disease relationships.

- Introduction to nutritional epidemiology: Definition, scope and significance of nutritional epidemiology in public health nutrition.
- Nature of dietary variation, measuring diet-disease associations- Type of measurement, time trends, correlation and regression, risk assessment
- Design of nutritional epidemiological studies, strengths and weaknesses of various designs in estimation of diet disease-relationships and their interpretation.
- Genetics in nutritional epidemiology- genetic variation and epigenetics in nutritional epidemiology- Gene diet interactions.
- Ethical aspects of research in nutritional epidemiology.

UNIT III: Exposures in Nutritional Epidemiology 12 Hours

This unit deals with various important exposures in nutritional epidemiology and critical review of their measurement method(s).

- Nutritional exposures- Relevant direct and indirect measures of nutritional assessment
  - Critical review of diet assessment methods- assessment of food consumption at different levels, measurement errors, strengths and limitations, reproducibility and validity of methods measuring food consumption of individuals- 24 dietary recall, diet record and food frequency methods, analysis of dietary patterns.

  Analysis and interpretation of dietary data.
  - Critical review of anthropometric and various direct measures of nutritional status- clinical, biochemical (nutritional biomarkers), biophysical and measures of body composition. Sources of errors, strengths and limitations of various measures. Relevance and use of various indices and indicators of nutritional status for risk assessment.
- Critical review of measures of physical activity: Strengths and weaknesses of subjective and objective assessment methods.

UNIT IV: Role of Epidemiological Research in Development of Nutrition Related Policies and their Evaluation 03 Hours

This unit highlights the role of nutritional epidemiology in generating evidence for nutrition related policies and programs to improve health and wellbeing of populations.

- Use of epidemiological research data for improvement of nutrition and health interventions or national programmes.

PRACTICAL
(Credits 1; Hours 30)

1. Critically review original research on studies in the field of nutritional epidemiology and do the following:
   - Identify research designs used, sampling, analyses and interpretation.
   - Identify applications of research evidence in the field of public health nutrition
2. Determine reliability and validity of an assessment tool
3. Estimate measurement error in anthropometric data
   - Interpret anthropometric data available from national and regional surveys
4. Review and document the changes in nutrition and health problems in vulnerable groups of the population in the last decade using secondary data (Indicators of mortality, morbidity, disability and nutritional status).

Essential Readings

UNIT I

- Bonita, R., Beaglehole, R., Kjellström T. (2006) Basic Epidemiology, 2nd Edition, WHO, 2006 http://whqlibdoc.who.int/publications/2006/9241547073_eng.pdf
- Park, K. (2025). Park's textbook of preventive and social medicine (28th ed.). Banarsidas Bhanot Publishers
- Vir, S.C. (2021). Public Health Nutrition in Developing Countries. Volume-II (2nd ed.) Woodhead Publishing India Pvt Ltd.
- Boyle, M. A. (2022). Community Nutrition in Action (8th ed.). Cengage Learning.

UNIT II

- Willett, W. (2013). Nutritional Epidemiology, Third Edition, Oxford University Press.
- Gibson, R. S. (2005). Principles of Nutritional Assessment. 2nd ed. Oxford University Press, Oxford, UK.
- Edelstein, S. (2023). Community and public health nutrition (5th ed.). Jones & Bartlett Learning.

UNIT III

- Willett, W. (2013). Nutritional Epidemiology, Third Edition, Oxford University Press.
- Gibson, R. S. (2005). Principles of Nutritional Assessment. 2nd ed. Oxford University Press, Oxford, UK.

- Buttriss, J. L., Welch, A. A., Kearney, J. M., & Lanham-New, S. A. (Eds.). (2017). Public health nutrition (2nd ed.). Wiley Blackwell.

UNIT IV

- Willett, W. (2013). Nutritional Epidemiology, Third Edition, Oxford University Press.
- Barth, M. M., Bell, R. A., & Grimmer (Somers), K. (Eds.). (2020). Public health nutrition: Rural, urban, and global – Community-based practice. Springer Publishing Company.
- Ministry of Health & Family Welfare. (2019). National Family Health Survey (NFHS-5) India 2019–21: State fact sheets. Government of India. https://rchiips.org/nfhs/factsheet_NFHS-5.shtml
- Ministry of Health & Family Welfare. (2018). Comprehensive National Nutrition Survey (CNNS) India 2016–18: National report. Government of India & UNICEF.
- NITI Aayog. (2017). National nutrition strategy: Nourishing India. Government of India.

Suggested Readings:

- Moon, G., Gould, M. (2000). Epidemiology: An Introduction. Philadelphia, Open University Press
- Langseth L. (1996). Nutritional Epidemiology: Possibilities and Limitations. Washington DC, ILSI Press.
- Gordis L. Epidemiology. 5th ed. Philadelphia, PA: Saunders Elsevier, 2013
- Aschengrau A., Seage G.R. (2014) Essentials of Epidemiology in Public Health. 3rd ed. Sudbury, MA: Jones & Bartlett.
- Gibney, M.J., Margetts, B.M., Kearney, J.M., Arab, L. (Eds) (2004) Public Health Nutrition. NS Blackwell Publishing
- **Alive & Thrive. (n.d.).** How to: A guide to effective nutrition advocacy. Alive & Thrive. https://www.aliveandthrive.org/en/resources/guidance-on-effective-nutrition-advocacy
- **1,000 Days. (n.d.).** The International Coalition for Advocacy on Nutrition (ICAN). 1,000 Days. https://thousanddays.org/ican/
- Dietary Guidelines for Indians, (2024). National Institute of Nutrition, Indian Council for Medical Research, Government of India. https://www.nin.res.in/dietaryguidelines/pdfjs/locale/DGI07052024P.pdf
- Ministry of Women and Child Development. (2018). Transforming nutrition in India: POSHAN Abhiyaan—A progress report (December 2018). Government of India. https://www.niti.gov.in/sites/default/files/2020-02/POSHAN_Abhiyaan_first_progress_report_6_Feb_2019.pdf
- International Institute for Population Sciences (IIPS), National Programme for Health Care of Elderly (NPHCE), Ministry of Health and Family Welfare, Harvard T. H. Chan School of Public Health, & University of Southern California. (2020). Longitudinal Ageing Study in India (LASI) wave 1, 2017–18: India report. International Institute for Population Sciences.
- Longvah, T., Ananthan, R., Bhaskarachary, K., & Venkaiah, K. (2017). Indian food composition tables. National Institute of Nutrition, Indian Council of Medical Research.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
STATISTICS AND DATA MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Statistics and Data Management	4	3	0	1		Nil

Learning Objectives

- To develop understanding of fundamental and advanced statistical concepts used in research and data analysis.
- To enable students to apply descriptive and inferential statistics for real-world decision-making.
- To strengthen ability to formulate hypotheses, select appropriate statistical tests, and interpret outputs.
- To prepare students for quantitative research, industry analytics, and academic data projects.
- To train students in using Excel and SPSS for data handling, visualization, and interpretation.

Learning Outcomes

The students would be able to:

- Explain key concepts in descriptive and inferential statistics.
- Organize, clean, and summarize datasets using appropriate statistical tools.
- Apply probability distributions, correlation, regression, and hypothesis testing.
- Use Excel and SPSS for data visualization, statistical testing, and reporting.
- Interpret statistical outputs and draw valid conclusions for research decisions.
- Design and execute quantitative data analysis workflows independently.

THEORY

(Credits 3; Hours 45)

UNIT I: Introduction and descriptive Statistics **12 Hours**

This unit will introduces the foundations of statistics and techniques for summarizing and describing data.

- Definition, scope, and applications of statistics
- Types of data: qualitative and quantitative
- Scales of measurement
- Classification & tabulation of data
- Graphical and visual representations
- Measures of central tendency: mean, median, mode
- Measures of dispersion: range, variance, standard deviation, coefficient of variation
- Skewness and kurtosis: meaning and interpretation

UNIT II: Probability and Probability Distributions **10 Hours**

This unit explores probability concepts and major statistical distributions.

- Basic probability concepts: Addition & multiplication theorems
- Random variables: discrete and continuous variable
- Binomial, Poisson and Normal distributions
- Sampling theory & sampling distributions
- Central Limit Theorem

UNIT III: Correlation and regression **8 Hours**

This unit focuses on analysing relationships between variables.

- Correlation: Pearson and Spearman correlation
- Simple linear regression: model, estimation, interpretation
- Multiple linear regression: assumptions, multicollinearity, model building

UNIT IV: Hypothesis Testing and Non-Parametric Methods **15 Hours**

This unit introduces hypothesis testing frameworks and non-parametric alternatives for non-normal data.

- Concept of hypothesis: null & alternative
- Types of errors, significance levels, p-value
- Parametric tests:
    - z-test
    - t-test (one sample, independent, paired)
    - ANOVA- One way
    - Chi-square test
- Non-parametric tests:
    - Mann–Whitney U test
    - Wilcoxon signed-rank test
    - Kruskal–Wallis test

- Interpretation and reporting of statistical results
- Research Conclusion and recommendation

Practical

(Credits 1; 30 hours)

1. Data Entry, Coding & Cleaning: Importing data, handling missing values, variable labels, Excel formulas.
2. Descriptive Statistics & Visualization: Mean, Standard Deviation, frequency tables, histograms, boxplots (Excel + SPSS).
3. Cross-Tabulation & Chi-Square Test: PivotTables in Excel; Crosstabs in SPSS.
4. Correlation Analysis: Pearson & Spearman correlations; scatterplots.
5. Simple Linear Regression: Trendline in Excel; Regression output in SPSS.
6. Multiple Regression: Model summary, coefficients, interpretation using SPSS.
7. t-Tests: Independent, paired, and one-sample t-tests in SPSS.
8. ANOVA (One-way & Two-way): Running ANOVA and post-hoc analysis.
9. Non-Parametric Tests: Mann-Whitney, Wilcoxon, Kruskal–Wallis in SPSS.
10. Report Generation & Interpretation
11. Preparing APA-style tables, graphs, and interpretations in Excel/SPSS.

Essential Readings:

UNIT I

This unit describes the foundations of statistics and techniques for summarizing and describing data.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.). Pearson Prentice Hall.
- Bernard, H. R. (2000). *Social research methods: Qualitative and quantitative approaches*. Sage.
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.). CreateSpace Independent Publishing Platform.
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*. Wiley.

UNIT II

This unit deals with the probability concepts, rules of probability, discrete and continuous distributions (Binomial, Poisson, Normal).

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).

- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*.

UNIT III

This unit focuses on relationship between variables, correlation coefficients, simple and multiple regression, regression assumptions.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Muijs, D. (2004). *Doing quantitative research in education with SPSS*. Sage.

UNIT IV

The unit deals with statistical inference such as t-tests, ANOVA, Chi-square, non-parametric tests (Mann-Whitney, Wilcoxon, Kruskal-Wallis), decision making.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*.
- Muijs, D. (2004). *Doing quantitative research in education with SPSS*.

Suggested Readings

- Field, A. (2025). *Discovering Statistics Using IBM SPSS Statistics* (6th ed.). Sage.
- Kalyanaraman, K., Ramanathan, H. N., & Harikumar, P. N. (2025). *Statistical Methods for Research: A Step-by-Step Approach Using IBM SPSS*. Atlantic Publishers.
- Healey, J. F., & Donoghue, C. (2021). *Statistics: A Tool for Social Research and Data Analysis* (11th ed.).

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

MEDICAL NUTRITION THERAPY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Medical Nutrition Therapy	4	3	0	1		Nil

Learning Objectives

- To understand the nutrition support for hospitalized patients.
- To examine the etiology, pathophysiology and metabolic alterations associated with various disorders/diseases and to provide appropriate nutrition care and medical nutrition therapy (MNT).
- To develop essential skills in dietary counseling for the effective management of diverse disease conditions.

Learning Outcomes

The students would be able to:

- Develop an understanding about the basic principles of providing nutrition support to hospitalized patients
- Attain comprehensive knowledge of the etiolgy, pathophysiology, metabolic anomalies, and corresponding medical nutrition therapy for a wide range of disorders/diseases.
- Apply fundamental principles of dietary counseling to support nutrition management across various disease conditions.

THEORY

(Credits 3; Hours 45)

UNIT I: Nutrition support system **7 Hours**

This unit will highlight the basic principles, indications, contraindications, access routes, nutrient composition, complications and guidelines on enteral and parenteral nutrition.

- Enteral and Parenteral Nutrition
- International and National Guidelines on Enteral and Parenteral Nutrition

UNIT II: MNT for Hepatic Disorders **7 Hours**

Students will understand the etiopathophysiology, metabolic & clinical aberrations, diagnosis, complications, treatment, MNT and recent advances in disorders and also be trained on disease specific dietary counseling.

- End stage liver disease (ESLD)
- Hepatic Encephalopathy
- Liver resection and transplant

UNIT III: MNT for Cardiovascular Disorders **11 Hours**

This unit explains the etiopathophysiology, metabolic & clinical aberrations, diagnosis, complications, treatment, MNT and recent advances in different diseases/disorders. Students will also be trained on disease specific dietary counseling.

- Ischemic Heart Disease (compensated and decompensated)
- Rheumatic Heart Disease
- Coronary artery bypass graft (CABG), angioplasty
- Cerebrovascular and peripheral vascular disease
- Heart transplant

UNIT IV: MNT for Renal Disorders **20 Hours**

This unit will provide an understanding of etiopathophysiology, metabolic & clinical aberrations, diagnosis, complications and recent advances in prevention, treatment, MNT and dietary Counselling in kidney disorders.

- Nephrotic Syndrome
- Glomerulonephritis
- Acute Renal Failure
- Chronic Kidney Disease
- End Stage Renal Disease (ESRD)
- Dialysis, Transplant, Renal Stones

PRACTICAL
(Credits 1; Hours 30)

1. Market Survey for commercial nutritional therapeutic products
2. Planning & preparation of diets for the following conditions:
    - Hepatic Encephalopathy
    - Liver Transpalant

- Ischemic Heart Disease
- Nephritis
- Acute Renal Failure
- Chronic renal failure
- Patients on dialysis

Essential Readings

UNIT 1

Students will be introduced to the access routes, indications, contraindications, nutrient composition, complications and guidelines on enteral and parenteral nutrition.

- Indian Dietetics Association, (2018). Clinical Dietetics Manual, 2nd ed. Elite Publishing House Pvt. Ltd. (ISBN: 9788193599648)
- Joshi Y K. (2008). Basics of Clinical Nutrition 2nd ed. Jaypee Brothers Medical Publishers. (ISBN: 978-9350251768)
- Mahan, L.K. and Escott-Stump, S. (2021). Krause's Food Nutrition and Nutrition Care Process, 16th Edition, Elsevier Pvt. Ltd. (ISBN: 032381025X)

- ESPEN guidelines: https://www.espen.org/guidelines/espen-practical-guidelines-pdf-versions
- ASPEN guidelines: https://nutritioncare.org/clinical-resources/guidelines-standards/

UNIT II

Students will learn about etiology, metabolic and clinical abnormalities, diagnosis, complications, treatment, MNT, new advancements and counseling in liver disease.

- Indian Dietetics Association, (2018). Clinical Dietetics Manual, 2nd ed. Elite Publishing House Pvt. Ltd. (ISBN: 9788193599648)
- Joshi Y K. (2008). Basics of Clinical Nutrition 2nd ed. Jaypee Brothers Medical Publishers. (ISBN: 978-9350251768)
- Khanna K, Gupta S, Seth R, Passi SJ, Seth R, Mahna R, Puri S (2013). Textbook of Nutrition and Dietetics.2nd Edn. Phoenix Publishing House Pvt. Ltd.
- Mahan, L.K. and Escott-Stump, S. (2021). Krause's Food Nutrition and Nutrition Care Process, 16th Edition, Elsevier Pvt. Ltd. (ISBN: 032381025X)
- Seth, V. and Singh K. (eds.) (2024). Principles of Medical Nutrition Therapy for Positive Clinical Outcomes, 2nd Edition. Elite Publishing House Pvt. Ltd.
- Role of Nutrition in the Management of Hepatic Encephalopathy in End-Stage Liver Failure: https://pmc.ncbi.nlm.nih.gov/articles/PMC3017957/
- ESPEN Guidelines on clinical nutrition in liver disease: https://www.espen.org/files/ESPEN-Guidelines/ESPEN_practical_guideline_Clinical_nutrition_in_liver_disease.pdf

- Indian standard treatment guidelines organ transplant: Liver: https://clinicalestablishments.mohfw.gov.in/sites/default/files/standard-treatment-guidelines/1511.pdf

UNIT III

This unit covers the etiopathophysiology, metabolic and clinical abnormalities, diagnosis, consequences, treatment, MNT, and current developments and counseling in cardiovascular disease.

- British Nutrition Foundation (Ed.), Stanner, S. (Ed.), Coe, S. (Ed.), & Frayn, K. N. (Managing Ed.). (2019). Cardiovascular disease: Diet, nutrition and emerging risk factors (2nd ed.). Wiley-Blackwell. (ISBN: 978-1-118-82991-2)
- Indian Dietetics Association, (2018). Clinical Dietetics Manual, 2nd ed. Elite Publishing House Pvt. Ltd. (ISBN: 9788193599648)
- Joshi Y K. (2008). Basics of Clinical Nutrition 2nd ed. Jaypee Brothers Medical Publishers. (ISBN: 978-9350251768)
- Khanna K, Gupta S, Seth R, Passi SJ, Seth R, Mahna R, Puri S (2013). Textbook of Nutrition and Dietetics.2nd Edn. Phoenix Publishing House Pvt. Ltd.
- Mahan, L.K. and Escott-Stump, S. (2021): Krause‘s Food Nutrition and Nutrition Care Process, 16th Edition, Elsevier Pvt. Ltd. (ISBN: 032381025X)
- Seth, V. and Singh K. (eds.) (2024) Principles of Medical Nutrition Therapy for Positive Clinical Outcomes, 2nd Edition. Elite Publishing House Pvt. Ltd.
- Diet and Cardiovascular Disease: Advances and Challenges in Population-based Studies: https://pmc.ncbi.nlm.nih.gov/articles/PMC5844273/

UNIT IV

Students will learn about etiology, metabolic and clinical abnormalities, diagnosis, complications, treatment, MNT, new advancements and counseling in kidney disease.

- Gonyea, J. E., & Phillips, S. C. (Eds.). (2023). Clinical guide to nutrition care in kidney disease (3rd ed.). Academy of Nutrition and Dietetics. (ISBN-13: 978-0-88091-201-3)
- Indian Dietetics Association, (2018) Clinical Dietetics Manual, 2nd Edition. Elite Publishing House Pvt. Ltd. (ISBN: 9788193599648)
- Joshi Y K. (2008). Basics of Clinical Nutrition 2nd ed. Jaypee Brothers Medical Publishers. (ISBN: 978-9350251768)
- Khanna K, Gupta S, Seth R, Passi SJ, Seth R, Mahna R, Puri S (2013). Textbook of Nutrition and Dietetics.2nd Edn. Phoenix Publishing House Pvt. Ltd.
- Mahan, L.K. and Escott-Stump, S. (2021): Krause‘s Food Nutrition and Nutrition Care Process, 16th Edition, Elsevier Pvt. Ltd. (ISBN 032381025X)
- Seth, V. and Singh K. (eds.) (2024) Principles of Medical Nutrition Therapy for Positive Clinical Outcomes, 2nd Edition. Elite Publishing House Pvt. Ltd.

- KDIGO 2024 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease: https://kdigo.org/wp-content/uploads/2024/03/KDIGO-2024-CKD-Guideline.pdf

Suggested Readings

- Chowdhary S.R and Aeri B.T. (2023) Textbook of Food Science and Nutrition. Aarahan Publishers. ISBN:978-93-87270-08-4
- Gibney MJ, Elia M, Ljungqvist &Dowsett J. (2005) Clinical Nutrition. The Nutrition Society Textbook Series. Blackwell Publishing Company
- ICMR (2020) Estimated Average Requirements and Recommended Dietary Allowances for Indians. Published by National Institute of Nutrition, Hyderabad.
- Longvah T, Ananthan R, Bhaskarachary K and Venkaiah K (2017). Indian Food Composition Tables. National Institute of Nutrition, ICMR, Hyderabad.
- Puri S, Bhagat A, Aeri, BT, Sharma A (2019). Food Exchange List: A Tool for meal Planning. Elite Publishing House. New Delhi.
- Shils, M.E., Shike, M, Ross, A.C., Caballero B and Cousins RJ (2005) Modern Nutrition in Health and Disease. 10th ed. Lipincott, William and Wilkins.
- Siddhu A, Bhatia N, Singh K, Gupta S (2017). Compilation of food exchange list, technical series 6, Lady Irwin College, University of Delhi. Publ. Global Books Organisation, Delhi
- Williams, S.R. (2001) Basic Nutrition and Diet Therapy. 11th ed. Times Mirror Mosby College Publishing

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

INSTITUTIONAL FOOD SERVICE MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Institutional Food Service Management	**4**	**2**	**0**	**2**		**Nil**

Learning Objectives

- To develop a knowledge base about the facilities required for different types of food service UNITs
- To equip individuals in understanding and managing resources in a food service institution
- To provide practical skills necessary to manage food service operations in institutional settings

Learning Outcomes

- Gain expertise to function as a food service manager.
- Understand and manage resources in a food service institution.
- Acquire practical experience in managing food service operations for food service UNITs ensuring quality, safety, efficiency and customer satisfaction

THEORY
(Credits 2; Hours 30)

UNIT I: Managing Catering Processes **5 Hours**

In this unit, the students will learn about the management approaches and tools used by managers in food service operations.

- Approaches to management: Classical, Systems approach, Management by Objective, Just-in Time, Total Quality Management
- Tools of Management:
  Tangible Tools: Organization chart, Job description, Job specification, Job analysis, Work schedule, Production schedule, Staff and service analysis statements
  Intangible Tools: Communication, Leadership, Decision making

UNIT II: Food Production and Service **12 Hours**

In this unit, the students will learn the components of food production cycle and quality compliance in food service UNITs.

- Food production process
- Meal Ordering Systems (Manual, EMO's)
- Food service in hospitals
- Quality Assurance and accreditation in Food service and health care systems- FSSAI, HACCP, GMP, GHP, NABH, JCI

UNIT III: Management of Resources **10 Hours**

In this unit, students will understand the management of space, equipment, personnel and finances in food service institutions.

- Space and Equipment: Steps in layout planning and architectural features, Feasibility assessment in terms of layout planning
- Personnel: Components of an integrated staffing system, Dealing with employee behaviour, Techniques of motivating employees, Labour Laws
- Managing Finances: Records, Reports, Components of costs and factors affecting costs, Financial accounting, Pricing methods, concept of BEP

UNIT IV: Marketing and Sales Management **3 Hours**

In this unit, the students will understand the marketing principles and strategies relevant to institutional food service.

- Product Differentiation, SWOT Analysis
- Marketing techniques and strategies, Marketing mix
- Sales Management

PRACTICAL
(Credit 2; Hours 60)

1. Market survey of food service organizations **4 Hours**

Market survey of food service organizations to understand the food production and service areas, equipment, labour requirements, marketing and records

2. Planning menus for the following: **20 Hours**

- Conference/ Buffet
- Two-day menu for a super specialty hospital
- Three-day menu for a college canteen

3. Quantity cooking: Food stall **28 Hours**

- Menu planning
- Standardizing recipes and scaling up to 50/100 portions
- Development of sales promotion tool
- Conduct of project

4. Promoting good hygiene and sanitation practices in a food service UNIT **8 Hours**

- Development of tool/aid to promote good hygiene practices
- Training of food service UNIT personnel in development of healthy menus and good hygiene practices
- Conduct of FSSAI checklist in the food service UNIT for good hygiene practices

Essential Readings

UNIT I

- Sethi, M. (2005) Institutional Food Management, New Age International Publishers.
- West, B. and Wood, L. (1988) Food Service in Institutions 6th Edition, John Wiley and Sons.

UNIT II

- Payne- Palacio, J. and Theis, M. (2015) Food service Management: Principles and Practices. 13th ed. Pearson Education.
- Prgomet, M., Li, J., Li, L., Georgiou, A., & Westbrook, J. I. (2019). The impact of electronic meal ordering systems on hospital and patient outcomes: A systematic review. International Journal of Medical Informatics, 129, 275–284.
- Sethi, M. (2005) Institutional Food Management, New Age International Publishers.
- West, B. and Wood, L. (1988) Food Service in Institutions 6th Edition, John Wiley and Sons

UNIT III

- Payne- Palacio, J. and Theis, M. (2015) Food service Management: Principles and Practices. 13th ed. Pearson Education.
- Sethi, M. (2005) Institutional Food Management, New Age International Publishers.
- West, B. and Wood, L. (1988) Food Service in Institutions 6th Edition, John Wiley and Sons
- Desai, V. (2011) The Dynamics of Entrepreneurial Development and Management, Himalya Publishing House Pvt. Ltd., Mumbai.

UNIT IV

- Payne- Palacio, J. and Theis, M. (2015) Food service Management: Principles and Practices. 13th ed. Pearson Education.
- Sethi, M. (2005) Institutional Food Management, New Age International Publishers.
- Desai, V. (2011) The Dynamics of Entrepreneurial Development and Management, Himalya Publishing House Pvt. Ltd., Mumbai.

Suggested Readings

- Knight, J. B. and Kotschevar, L.H. (2000) Quantity Food Production Planning & Management 3rd edition, John Wiley & Sons.
- Kotas, R. and Jayawardardene, C. (1994) Profitable Food and Beverage Management, Hodder & Stoughton Publications.
- Roday, S. (2003) Food Hygiene and Sanitation, Tata McGraw Hill Publication Ltd.
- Taneja, S. and Gupta, S.L. (2001) Entrepreneurship Development. Galgotia Publishing.
- Dessler, G. (2007) Human Resource Management 11th edition Prentice Hall New Jersey.
- Basic Food Safety Training Manual Catering (http://www.fssai.gov.in/home/capacity building/e-library/training-manual.html).
- Street Food Vendor Training on Food Safety and Hygiene (http://www.fssai.gov.in/home/capacity building/e-library/training-manual.html).

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

SOCIAL AND CULTURAL ASPECTS IN PUBLIC HEALTH NUTRITION

.

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Social and Cultural Aspects in Public Health Nutrition	**4**	**3**	**0**	**1**		**Nil**

Learning Objectives

- To explore how socio-cultural factors influence food and nutrition, both historically and in contemporary contexts.
- To examine the social and cultural determinants of food choices and diet-related behaviours.
- To understand the value of cultural knowledge in guiding nutrition practices.

Learning Outcomes

The students would be able to:

- Explain the social and cultural importance of food and its connection to biological aspects of nutrition.
- Analyze historical and current dietary practices and food consumption patterns across cultures.
- Evaluate the impact of social and cultural factors on food choices and dietary behaviours.
- To comprehend the significance of culturally appropriate nutrition interventions.

THEORY

(Credits 3; Hours 45)

UNIT I: Food, Nutrition, and Culture aspects in public health **10 Hours**

This unit deals with the social and cultural significance of food, its integration with biological

aspects of nutrition, It also explores cross-cultural differences and acculturation in food behaviours.

- Ethnological perspectives: social and cultural roles of food
- Integration of biological and socio-cultural aspects of food and nutrition
- Overview of Indian food anthropology

UNIT II: Historical and current perspectives of culture and food consumption 10 Hours

This unit explores the and historical versus current dietary practices and cultural differences in eating patterns

- Dietary practices and consumption patterns: historical and current perspectives, including health concerns
- Cross-cultural differences in eating behaviour
- Cultural integrity and acculturation in food choices

UNIT III: Food Choices and Diet-Related Behaviour: Social and Cultural Influences 18 Hours

This unit focuses on the influence of the food environment, socio-cultural practices, demographics, and other factors on dietary behaviours. It also includes culture-specific taboos and their role in promoting sustainable, healthy diets.

- Relationship between food environment and dietary practices
- Influence of social structures, demographic factors, cultural values, religious beliefs, and policy on food behaviour
- Culture-specific foods and taboos affecting children, adolescents, pregnant, and lactating women
- Socio-cultural influences on sustainable, healthy diets

UNIT IV: Cultural Knowledge in Nutrition 7 Hours

This unit highlights the role of cultural understanding in shaping food behaviour and delivering culture-specific dietary guidance.

- Influencing changes in food choices and dietary patterns
- Cultural interpretations of malnutrition
- Significance of cultural competence in the practice of public health nutrition - Providing culturally sensitive dietary advice and guidance

PRACTICAL
(Credits 1; Hours 30)

1. Studying staple foods and ethnic cuisines from different regions of India and the world

2. Exploring traditional foods for special occasions across cultures
3. Observing and reporting dietary patterns among individuals of different religions
4. Comparing food habits of migrants with their traditional diets
5. Investigating food waste behaviours across cultures
6. Examining regional diets during pregnancy and infant/child feeding practices
7. Assessing the impact of globalization on food environments and dietary practices

Essential Readings

UNIT I

- Antani, V., Mahapatra, S. (2022). Evolution of Indian cuisine: a socio-historical review. *J. Ethn. Food,* 9, 15. https://doi.org/10.1186/s42779-022-00129-4
- Dufour, D.L., Goodman, A.H. and Pelto, Gretel H. (2012). Nutritional Anthropology: Biocultural Perspectives on Food and Nutrition. 2nd Edition. Oxford University Press.
- Nambiar, V. (2021). Indian Food Anthropology and the Eat Right Movement. Volume I & II. Selective & Scientific Books, New Delhi.

UNIT II

- Dufour, D.L., Goodman, A.H. and Pelto, Gretel H. (2012). Nutritional Anthropology: Biocultural Perspectives on Food and Nutrition. 2nd Edition. Oxford University Press.
- Sanjur, D. (1982). Social and Cultural Perspectives in Nutrition. Prentice Hall.

UNIT III

- Buttriss, J.L., Welch, A. A., Kearney, J.M., Lanham-New, S.A. (Eds.). (2017). Public Health Nutrition (2nd Ed.). Wiley Blackwell.
- Dufour, D.L., Goodman, A.H. and Pelto, Gretel H. (2012). Nutritional Anthropology: Biocultural Perspectives on Food and Nutrition. 2nd Edition. Oxford University Press.
- Edelstein, S. (2023). Community and public health nutrition (5th ed.). Jones & Bartlett Learning.
- McWilliams, M. (2010). Food Around the World: A Cultural Perspective. Second Edition. Pearson Education.

UNIT IV

- Boyle, M. A. (2022). Community Nutrition in Action (8th ed.). Cengage Learning.
- Edelstein, S. (2023). Community and public health nutrition (5th ed.). Jones & Bartlett Learning.
- Sanjur, D. (1982). Social and Cultural Perspectives in Nutrition. Prentice Hall.

Suggested Readings

- Achaya, K.T. (1998). Indian Food. Oxford.
- Farb, P. and G. Armelagos. (1980). Consuming Passions: The Anthropology of Eating. Houghton Mifflin Harcourt.
- Germov, J. & Williams, L. (Eds.). (2009). A Sociology of Food and Nutrition: The Social Appetite. 3rd Edition. Oxford University Press.
- Gibney, M.J., Margetts, B.M., Kearney, J.K., & Arab, L. (Eds.) (2004). Public Health Nutrition. Wiley-Blackwell.
- Harris, M. (1987). Foodways: historical overview and theoretical prolegomenon. In: Harris, M. and E. B. Ross (eds.) Food and Evolution: Toward a Theory of Human Food Habits. Philadelphia: Temple University Press.
- Higman, B.W. (2011). How Food Made History. 1st Edition. Wiley-Blackwell.
- Le, S. (2018). 100 Million Years of Food: What Our Ancestors Ate and Why It Matters Today. Reprint Edition. Picador.
- McIntosh, Wm. A. (1996). Sociologies of Food and Nutrition. Springer New York.
- Seal, PP. (2023). Food Anthropology in India. Routledge India.
- Sidney, C.H.C. & Tan, C. (2007). Food and Foodways in Asia: Resource, Tradition and Cooking. 1st Edition. Routledge.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

IMPROVING MATERNAL, INFANT, YOUNG CHILD AND ADOLESCENT NUTRITION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Improving Maternal, Infant, Young Child and Adolescent Nutrition	**4**	**2**	**0**	**2**		**Nil**

Learning Objectives

- To understand the nutritional concerns during pregnancy, lactation, infant, young children and adolescence.
- To gain insight into key nutrition challenges and major maternal, child, and adolescent nutrition policies and programs
- To learn the principles of optimal infant and young child feeding practices.
- To develop skills for effective counselling to promote optimal nutrition for mothers, young children, and adolescents.

Learning Outcomes

The students would be able to:

- Explain the nutritional concerns of mothers during pregnancy and lactation, as well as those of infants, young children, and adolescents.
- Describe the principles of optimal infant and young child feeding practices.
- Demonstrate effective counselling skills to support and promote appropriate nutrition practices among mothers, young children, and adolescents.
- Analyse major nutrition concerns affecting maternal, child, and adolescent health.
- Interpret and evaluate key national flagship policies and programs related to maternal, child, and adolescent nutrition.

THEORY
(Credits 2; Hours 30)

UNIT I: Overview and importance of MIYCAN- linkages of MIYCAN with SDGs 4 Hours

This unit lays thrust on importance of the MIYCAN period and its links to national goals and the

SDGs.

- Overview and Importance of MIYCAN period
- Linkages between MIYCAN period and National goals and Sustainable Development Goals (SDGs)

UNIT II: Improving Nutrition During Pregnancy and Lactation **10 Hours**

This unit deals with maternal nutrition, key concerns, cultural influences, health risks, and management of nutrition-related pregnancy conditions, as well as the impact of diet on fetal growth. It was deals with lactation support, guidelines and programs, communit interventions, and essential counselling practices related to maternal nutrition.

- Nutritional needs during pregnancy and lactation- changes in macronutrient and micronutrient needs
- Nutritional concerns in prenatal and postnatal maternal nutrition, Cultural practices influencing maternal nutrition
- Major causes of maternal mortality and morbidity
- Management of common pregnancy-related disorders such as underweight, overweight, nutritional anaemias, pregnancy-induced hypertension, and gestational diabetes
- Relationship between maternal diet and birth outcomes; Impact of nutrient deficiencies on fetal growth and development, Low birth weight, preterm birth, and intrauterine growth restriction (IUGR); Role of maternal nutrition in brain development
- Lactation counselling and support, human milk banking, and strategies to promote effective breastfeeding.
- Guidelines for maternal nutrition- DGI, Nutrition Supplements, etc.; Maternal nutrition services under government programs; Community-based interventions for improving maternal nutrition
- Key nutrition counselling points for maternal nutrition

UNIT III: Infant and Young Child Nutrition **10 Hours**

This unit highlights the nutritional needs of infants and young children, patterns of mortality and common illnesses, preventive health measures, optimal feeding practices, and care of small and sick infants including growth monitoring and SAM management. It also covers key policies and programmes supporting child nutrition and essential counselling practices for caregivers.

- Nutritional needs during infancy and young child years- changes in macronutrient and micronutrient needs, significance of 1000 days
- Neonatal, infant, and child mortality patterns; Common childhood illnesses and nutrition-related morbidities; Preventive and promotive health measures (immunization, hygiene, deworming, early stimulation)
- Nurturing Care Framework, Guidelines for optimal infant and young child feeding; Exclusive breastfeeding - benefits, techniques, challenges; Appropriate complementary feeding practices (timing, consistency, frequency, diversity); Responsive feeding and hygiene practices,
- Care of small and sick infants – Kangroo Mother Care, management of diarrhoea and upper

respiratory tract infections (ARI). Growth monitoring and identification of malnourished children including SAM Children. Management of SAM children

- Policies and programmes addressing infant and young child nutrition (e.g., ICDS, HBNC, HBYC, MAA, IMNCI, IDCT etc.)
- Key nutrition counselling points for infant and young child nutrition

UNIT IV: Adolescent Nutrition **6 Hours**

This unit deals with adolescent nutrient needs, major nutrition concerns, their impact on future health, relevant policies and programmes, and key counselling points for healthy development.

- Nutritional needs during adolescent years- changes in macronutrient and micronutrient needs
- Impact of adolescent nutrition on future maternal and adult health; Key concerns like anemia, undernutrition, overweight/obesity, eating behaviours
- Policies and programmes addressing adolescent nutrition (e.g., ICDS, Supplementary nutrition programmes, School meal programmes, RBSK, RKSK)
- Key nutrition counselling points for adolescent nutrition

PRACTICAL
(Credits 2; Hours 60)

1. Gathering and analysing nutrition related indicators for pregnant and lactating women/ infants/ young children/ adolescents
2. Preparation of educational aid on adequate care and nutrition during pregnancy/ nursing mothers/ optimal infant and young child feeding practices/ adolescent girls on importance of adequate nutrition
3. Preparation of educational aid on prevention and management of diarrhoea/ importance and schedule of immunization/ importance of hygiene and sanitation.
4. Planning counselling sessions for nursing mothers for different techniques of breast feeding/ breastfeeding related problems/ expression of breastmilk/ kangaroo mother care etc.
5. Conduct activity to demonstrate age specific complementary food preparation for infants and young children (7 months/ 10 months/1.5 years).
6. Preparation and presentation of information card about various schemes related to maternal, child and adolescent nutrition.
7. Field visit to any ongoing national level programs related to maternal, child, and adolescent nutrition
8. Preparation of case study from field observations related to any one nutrition problem among maternal and child nutrition and health in India.
9. Preparation and presentation of information card about various the national/international organizations working in the field of maternal and child health and nutrition.

Essential Readings

UNIT I

- Park, K. (2025). Park's textbook of preventive and social medicine (28th ed.). Banarsidas Bhanot Publishers
- Vir, Sheila C (2021). Public Health Nutrition in developing Countries Part 1and 2. Woodhead Publishing India Limited

UNIT II

- Dietary Guidelines for Indians, (2024). National Institute of Nutrition, Indian Council for Medical Research, Government of India. https://www.nin.res.in/dietaryguidelines/pdfjs/locale/DGI07052024P.pdf
- Vir, Sheila C (2024). Child, Adolescent and Women Nutrition in India: Public Policies, Programmes and Progress. New Delhi: Routledge.
- Vir, Sheila C (2021). Public Health Nutrition in developing Countries Part1 and 2. Woodhead Publishing India Limited
- Bamji MS, Krishnaswamy K and Brahmam GNV (Eds) (2016). Textbook of Human Nutrition, 4th edition. Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi.
- World Health Organization (2016). WHO recommendations on antenatal care for a positive pregnancy experience, Geneva, Switzerland.
- Wadhwa A and Sharma S (2003). Nutrition in the Community-A Textbook. Elite PublishingHouse Pvt. Ltd. New Delhi.

UNIT III

- Dietary Guidelines for Indians, (2024). National Institute of Nutrition, Indian Council for Medical Research, Government of India. https://www.nin.res.in/dietaryguidelines/pdfjs/locale/DGI07052024P.pdf
- Vir, Sheila C (2024). Child, Adolescent and Women Nutrition in India: Public Policies, Programmes and Progress. New Delhi: Routledge.
- Vir, Sheila C (2021). Public Health Nutrition in developing Countries Part 1and 2. Woodhead Publishing India Limited
- Guidelines for Enhancing Infant and Young Child Feeding Practices (2013). Ministry of Health and Family Welfare, Government of India.
- Bamji MS, Krishnaswamy K and Brahmam GNV (Eds) (2016). Textbook of Human Nutrition, 4th edition. Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi.
- Wadhwa A and Sharma S (2003). Nutrition in the Community-A Textbook. Elite PublishingHouse Pvt. Ltd. New Delhi.

UNIT IV

- Dietary Guidelines for Indians, (2024). National Institute of Nutrition, Indian Council for Medical Research, Government of India. https://www.nin.res.in/dietaryguidelines/pdfjs/locale/DGI07052024P.pdf
- Vir, Sheila C (2024). Child, Adolescent and Women Nutrition in India: Public Policies, Programmes and Progress. New Delhi: Routledge.
- Vir, Sheila C (2021). Public Health Nutrition in developing Countries Part 1and 2.

Woodhead Publishing India Limited
- Bamji MS, Krishnaswamy K and Brahmam GNV (Eds) (2016). Textbook of Human Nutrition, 4th edition. Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi.
- Wadhwa A and Sharma S (2003). Nutrition in the Community-A Textbook. Elite PublishingHouse Pvt. Ltd. New Delhi.

Suggested Readings

- Relevant IEC material from Government of India (including Ministry of Health and Family Welfare, Ministry of Women and Child Development, and other ministries working in nutrition) and Non-Governmental Organizations working in the area of health and nutrition.
- Ministry of Health and Family Welfare (2016). Infant and Young Child Feeding, Training Module for ANMs, Mothers Absolute Affection, National Health Mission, New Delhi.
- Shane A Norris, Edward A Frongillo, Maureen M Black, Yanhui Dong, Caroline Fall, Michelle Lamplet al (2022). Nutrition in adolescent growth and development. The Lancet Vol. 399No. 10320P172-184.
- Dougal Hargreaves, Emily Mates, Purnima Menon, Harold Alderman, Delan Devakumar, Wafai Fawziet al (2022). Strategies and interventions for healthy adolescent growth, nutrition, and development. The Lancet, Vol. 399No. 10320P198-210.
- Victora, Cesar G et al (2021). Revisiting maternal and child undernutrition in low-income and middle-income countries: variable progress towards an unfinished agenda. The Lancet, Volume 397, Issue 10282, 1388 – 1399.
- Heidkamp, Rebecca A et al (2021). Mobilising evidence, data, and resources to achieve global maternal and child undernutrition targets and the Sustainable Development Goals: an agenda for action. The Lancet, Volume 397, Issue 10282, 1400 – 1418.
- Zohra S. Lassi, Rehana A. Salam (2025). Nutrition Across Reproductive, Maternal, Neonatal, Child, and Adolescent Health Care: Focus on Low- and Middle-Income Countries, Springer Nature.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
ANIMAL PRODUCTS PROCESSING AND PRESERVATION

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Prerequisites of the Course (if any)
		Lecture	Tutorial	Practical		
Animal Products Processing and Preservation	**4**	**3**	**0**	**1**		**Nil**

Learning Objectives

- To gain in-depth knowledge of processing aspects involved in milk and milk products, meat, fish, poultry, and eggs.
- The course aims to provide knowledge of the principles and preservation of milk and milk products, meat, fish, poultry, eggs, fruits, and vegetables.

Learning Outcomes

The students would be able to:

- Understand the composition and quality standards of milk, plant produce, and animal-based foods.
- Learn essential processing and preservation methods for dairy, fruits–vegetables, and animal products.
- Develop skills in quality testing of milk, eggs, meat, poultry, fish, and processed items.
- Gain knowledge of manufacturing steps and quality aspects of major dairy and animal products.
- Apply hygiene, sanitation, and basic HACCP principles in food processing operations.

THEORY
(Credits 3; Hours 45)

UNIT I: Milk and Milk Products processing **18 Hours**

This unit deals with the introduction, composition, nutritive value, properties, processing, manufacturing and quality aspects of milk and milk products

- **Introduction to market milk:** Indian standards, Composition, factors affecting composition of milk, physicochemical properties of milk and its constituents, Clean milk practices, buying and collection, platform tests.
- **Milk processing:** Pre-heating, filtration, clarification, standardization, bactofugation, homogenization, pasteurization, cooling, packaging and storage.
- **Milk products (Cream, butter, ice cream, curd, cheese, khoa and ghee)-**Introduction, definition, classification, methods of manufacture, quality aspects.

UNIT II: Technology of Meat and Poultry 12 Hours

This unit deals with the composition, nutritive value, classification, pre-slaughter handling, post-mortem changes and preservation of meat and poultry.

- Chemical composition and nutritive value, Types and classification of meat and poultry
- Pre-slaughter handling; ante-mortem and post-mortem inspection; methods of stunning, slaughter, and dressing.
- Post-mortem muscle changes—rigor mortis, factors affecting rigor, thaw rigor, and cold shortening, ageing, curing, smoking, tenderizing, and colour changes in meat.
- Hygiene and sanitation practices in slaughterhouses
- Major preservation methods: chilling, freezing, curing, smoking, dehydration, canning, and irradiation, antibiotic residue concerns, concept of value addition and by-product utilization

UNIT III: Fish processing and products 6 Hours

This unit deals with the composition, nutritive value, post-harvest changes, spoilage, processing, preservation and utilisation of fish and its products.

- Composition, nutritive value and on-board handling of fish, Post-harvest physiology and spoilage of fish.
- Preservation techniques: Chilling, freezing (IQF, block freezing), curing, drying, smoking, canning, irradiation, Modified Atmosphere Packaging and quality factors.
- Fish processing and value-added products: Surimi, fish mince, fish protein concentrates. Utilization of fish processing by-products.

UNIT IV: Egg processing and products 9 Hours

This unit deals with the composition, nutritive value, functional properties, quality aspects, processing of fish and its products.

- Nutritive value and functional properties of eggs
- Egg grading and quality standards, quality factors, and storage
- Bacterial infection, pasteurization, freezing, drying, and egg substitutes.

- Processing of egg products: Egg powders, frozen eggs, liquid eggs. Technology of egg foams and factors influencing foaming characteristics.

PRACTICAL
(Credits 1; Hours 30)

List of Experiments

- Determination of Acidity in milk and milk products.
- Platform tests for milk quality: (COB, MBRT, Specific gravity, SNF)
- Estimation of milk fat by the Gerber method.
- Assessment of common adulterants in milk and milk products.
- Preparation and Quality Evaluation of Chicken Sausage.
- Planning of generic HACCP model for poultry.
- Quality evaluation of fish (Fresh vs Stale).
- Detection of meat in Vegan foods
- Cut out analysis of canned fish (Sardine/Mackerel/Tuna) and analysis of external and internal parameters.
- Evaluation of eggs for quality parameters (market eggs, branded eggs)

Essential Readings/ Suggested Readings

UNIT I

- De, S. (2007).Outlines of Dairy Technology.Oxford: Oxford University Press.
- Webb B.H.and Alford (2005). Fundamentals of dairy chemistry. CBS Publisher.
- Potter, N. N., & Hotchkiss, J. H. (2012). Food science. Springer Science & Business Media.
- Srilakshmi, B.(2002). Food science. New Age Publishers
- https://www.scribd.com/document/659871719/Manual-Dairy-03-10-2022

UNIT II

- Hui, Y.H. 2001. Meat Science and Applications. Marcel Dekker.
- Pearson, A.M. & Gillett, T.A. 1996. Processed Meats. 3rd Ed. Chapman & Hall.
- Lawrie, R.A. 2006. Lawrie's Meat Science. 7th Ed. Woodhead Publishing.
- Potter, N. N., & Hotchkiss, J. H. (2012). Food science. Springer Science & Business Media.
- Srilakshmi, B.(2002). Food science. New Age Publishers
- Van Loesecke HW (1998) *Food Technology Series Drying and Dehydration of foods*. Allie Scientific Publishers

UNIT III

- Govindan, T.K. 1985. Fish Processing Technology. Oxford & IBH.
- Sen, D.P. (2005). Advances in Fish Processing Technology. Allied Publishers Pvt.Limited.
- Hall, G.M. (1997). Fish Processing Technology. 2nd edition NY: VCH

- ElShehawy, S. M., & Farag, Z. S. (2019). Safety assessment of some imported canned fish using chemical, microbiological and sensory methods. *Egyptian Journal of Aquatic Research, 45*(4), 389–394.
- Pais-Costa, A. J., Marques, J. C., & Prego, R. (2025). New perspectives on canned fish quality and safety. *Foods*, 14(1), 99
- Potter, N. N., & Hotchkiss, J. H. (2012). Food science. Springer Science & Business Media.
- Srilakshmi, B.(2002). Food science. New Age Publishers

UNIT IV

- Stadelman, W.J. and Cotterill, O.J. 2001. Egg Science and Technology. Haworth Press.
- Potter, N. N., & Hotchkiss, J. H. (2012). Food science. Springer Science & Business Media.
- Srilakshmi, B.(2002). Food science. New Age Publishers

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
UNIT OPERATIONS IN FOOD PROCESSING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Unit Operations in Food Processing	**4**	**2**	**0**	**2**		**Nil**

Learning Objectives

- To impart knowledge about various UNIT operations used in food processing
- To understand the efficiency and suitability of equipment for specific UNIT operations
- To understand the concept of hygienic design, sustainability, and Industry 4.0 elements in process planning

Learning Outcomes

The students would be able to:

- analyse and differentiate various UNIT operations used in food processing
- evaluate the efficiency and suitability of equipment for specific UNIT operations
- apply hygienic design, sustainability, and Industry 4.0 elements in process planning

THEORY
(Credits 2; Hours 30)

UNIT I: Introduction to Unit Operations **2 Hours**

This unit deals with the introduction and classification of UNIT operations in food processing.

- Definition of UNIT operations,
- Classification of UNIT operations:
  - Preliminary operations (cleaning of raw material, sorting, grading)
  - Conversion operations (size reduction, mixing, filtration, centrifugation, etc.)
  - Preservation operations (heat processing, evaporation, freezing, irradiation, etc.)
  - Ancillary operations (plant hygiene, water supplies, material handling, etc.)

UNIT II: Preliminary Operations **4 Hours**

This unit deals with the cleaning, sorting, grading and peeling of food in industry.

- Cleaning: theory, methods of cleaning – wet and dry and applications
- Sorting and grading: theory, methods (shape and size, weight, color and machine vision sorting and grading systems) and applications, recent developments.
- Peeling: theory, methods and applications

UNIT III: Conversion Operations **12 Hours**

This unit deals with the operations like size reduction, mixing , centrifugation, expression, extraction, filtration and membrane separation.

- Size reduction: Theory, Principles of size reduction- energy laws; Equipment of size reduction in solid and liquid food- mechanism and working principle, Effect on foods and microorganism, Developments in size reduction technologies.
- Mixing: Theory, Equipment of mixing in – dry powders, low or medium viscosity liquids, high viscosity liquids and pastes, dispersion of powders in liquids, Effect on foods and microorganism, Developments in mixing technologies.
- Centrifugation: Theory, Equipment for- separation of immiscible liquids, clarification of liquids by removal of small amounts of solids, removal of solids.
- Expression and Extraction: Theory and Equipment
- Filtration and Membrane Separation: Theory, types, membrane fouling, Equipment, applications in food processing.

UNIT IV: Automation, Sustainability and Hygienic Design in UNIT Operations 12 Hours

This unit deals with recent advancements in food processing UNIT operations with emphasis on automation, sustainability and hygienic design

- Food plant design
- Automation in processing lines and equipment control; introduction to PLC, sensors and machine vision in selected UNIT operations (sorting, grading, mixing, membrane processing).
- Industry 4.0 applications: data-driven process monitoring, predictive maintenance and traceability.
- Sustainability considerations in equipment and process selection: energy efficiency, water use reduction and waste minimization strategies.
- Hygienic design principles: sanitary materials of construction, equipment cleanability and advances in CIP/SIP systems.

PRACTICAL
(Credits 2; Hours 60)

- Sorting and grading of food material (grains, spices, fruits and vegetables)
- Screen analysis of food sample
- Freezing time calculation
- Mixing index calculation using solid-solid and liquid-liquid systems
- Estimation of filtration rate
- Study of ultra-filtration process.
- Food plant design
- Study on material handling in food processing industry
- Industrial Visit

Essential Readings

UNIT I

- Fellows, P. J. (2017). Food Processing Technology: Principles and Practice (4th ed.). Woodhead Publishing.
- Barbosa-Cánovas, G. V., Balasubramaniam, V. M., Chorng-Li, T., Pothakamury, U. R., & Swanson, B. G. (2001). Non thermal Processing of Foods. IFT Press/Marcel Dekker.
- Singh, R. P., & Heldman, D. R. (2014). Introduction to Food Engineering (5th ed.). Academic Press.
- Ibarz, A., & Barbosa-Cánovas, G. V. (2014). UNIT Operations in Food Engineering. CRC Press.

UNIT II

- Barbosa-Cánovas, G. V., Balasubramaniam, V. M., Chorng-Li, T., Pothakamury, U. R., & Swanson, B. G. (2001). Non thermal Processing of Foods. IFT Press/Marcel Dekker.
- Fellows, P. J. (2017). Food Processing Technology: Principles and Practice (4th ed.). Woodhead Publishing.
- Ibarz, A., & Barbosa-Cánovas, G. V. (2014). UNIT Operations in Food Engineering. CRC Press.

UNIT III

- Heldman, D. R., & Lund, D. B. (2007). Handbook of Food Engineering (2nd ed.). CRC Press.
- Fellows, P. J. (2017). Food Processing Technology: Principles and Practice (4th ed.). Woodhead Publishing.

UNIT IV

- Sun, D. W. (Ed.). (2016). Emerging Technologies for Food Processing (2nd ed.). Academic Press.
- Singh, R. P., & Heldman, D. R. (2014). Introduction to Food Engineering (5th ed.). Academic Press.

Suggested Readings

- R. Paul Singh and Dennis R. Heldman. 2014. Introduction to Food Engineering, 5th Ed. Elsevier, Amsterdam, The Netherlands.
- Christie John Geankoplis. 2003. Transport Processes and Separation Process Principles (Includes UNIT Operations), 4th Ed. Prentice-Hall, NY, USA.
- Warren L. McCabe, Julian Smith, Peter Harriott. 2004. UNIT Operations of Chemical Engineering, 7th Ed. McGraw-Hill, Inc., NY, USA.
- Toledo R T, 2018. Fundamentals Of Food Process Engineering, Springer, Fourth Edition ISBN: 9783319900971
- Fritz, M., & E. Hertel (2020). "Sustainability and Digitalization in the Food Industry." Journal of Food Engineering Trends.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

EXERCISE, NUTRITION AND METABOLISM

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Exercise, Nutrition and Metabolism	**4**	**3**	**0**	**1**		**Nil**

Learning Objectives

- To familiarize students with the concepts of metabolism, energy expenditure and periodisation for fitness and sports
- To enable students to imbibe knowledge and methods for planning daily diets; nutrient intake strategies and hydration for fitness and various types of sports

Learning Outcomes

- The students would be able to understand the role of different nutrients in sports performance and health of a competitive or recreational athlete.
- Students will be able to plan daily diets; nutrient intake strategies and hydration regimens for various types of sports

THEORY

(Credits 3; Hours 45)

UNIT I: Energy and Macronutrient intake for physical fitness and periodised sports training **15 Hours**

This unit focusses on Energy metabolism and macronutrients for physical fitness and sports performance

- **Exercise Energy expenditure:** Concept of metabolism; periodisation in sports; energy systems and energy availability for assessment of energy requirement of athletes and consequences of energy imbalance on performance; commonly reported energy intake patterns of athletes.

- **Carbohydrate Intake and performance:** Carbohydrate and its utilisation in the body; intensity of training impacting carbohydrate utilisation; recommendations of type, timing and quantity of carbohydrate intake in resistance training and endurance training
- **Fat Intake and performance:** Intensity of training impacting fat utilization; recommendations of type, timing and quantity of fat intake in resistance training and endurance training.
- **Protein Intake and performance:** Type and quality of protein and its utilisation in the body; protein turnover and recommendations for protein during endurance versus resistance training; specific role of amino acids for performance; dietary protein strategies for performance enhancement

UNIT II: Micronutrients in exercise performance **15 Hours**

This unit focusses on Energy metabolism and macronutrients for physical fitness and sports performance

- **Vitamins:** Intake of vitamins in exercise performance: through mental ability, immunity and recuperation to an injury; performance benefits of key vitamins; requirements for athletes.
- **Minerals:** Mineral intake and exercise performance: mental ability, immunity and recuperation to an injury; performance benefits of key minerals; requirements for athletes.
- **Antioxidants:** Definition of oxidative stress in exercise and sports; antioxidants; enzymatic and non-enzymatic antioxidants; mode of action; antioxidant effects in reducing exercise related oxidative stress; effect on muscle contraction and exercise performance; antioxidant deficiencies and exercise performance; antioxidant requirements for exercise.

UNIT III: Hydration strategies for athletes **5 Hours**

This unit focuses on dehydration and strategies for hydration for athletes

- **Dehydration:** Causes; symptoms and its effects on cardiovascular system and muscle metabolism; tolerable levels of dehydration; synergistic effect of dehydration and hyperthermia; effects of dehydration on endurance performance; methods for determining degree of dehydration among athletes; strategies for lowering hyperthermia.
- **Hydration strategies:** Beverage composition and formulation (isotonic, hypotonic and hypertonic); only fluid versus fuelling with other macronutrients and electrolytes for exercise benefits; beverage volume for maintaining euhydration with performance benefits; beverage timing (pre-exercise hydration, during exercise hydration protocol, post-exercise rehydration); factors that influence intake; gastric emptying and absorption of

fluids; beverage palatability and fluid intake; intravenous rehydration; food versus fluid consumption during exercise.

UNIT IV: Nutrient periodisation and meal timing for sports **10 Hours**

This unit will strengthen concepts and application of nutrient periodisation, meal timing related to the type of training and exercise of all types, with special focus on endurance events.

- **Nutrient periodisation and Meal timing:** Concept and importance of periodisation and meal timing related to the type of training and exercise intensity.
- Effect of energy intake and co-ingestion of carbohydrate and protein before, during and after training.
- Importance of timing of carbohydrate intake; type of carbohydrates and proteins beneficial for maximum refuelling post exercise sessions.
- Gender differences in carbohydrate, protein and fat refuelling strategies.
- Effect of high or low carbohydrate, protein and fat on training adaptation and performance; periodisation of macronutrients based on the phase/season of training and strategies to be followed.

PRACTICAL

(Credits 1; Hours 30)

1. To calculate exercise energy expenditure using the factorial method with activity records and energy cost of sports from the compendium for athletes.
2. Menu planning for food and fluid intake (incorporating traditional Indian food ingredients) for training of:
    - Endurance games
    - Power games in different weight categories
    - Team sports
    - Skilled sports
3. Menu planning for athletes for the following:
    - Pre-competition meal
    - Consumption during-competition
    - Post-competition recovery meal
4. Formulation of sports drinks using traditional Indian food ingredients:
    - Isotonic beverages

- Hypotonic / hypertonic beverages

Essential Readings

UNIT I

- Burke, L., Minehan, M., and Deakin, V. (Eds.). (2021). Clinical Sports Nutrition (Vol.6) McGraw-Hill Education , Australia. ISBN-13:978-1760425647
- Campbell, B. (Ed.). (2013). Sports nutrition: enhancing athletic performance. CRC Press.
- Fink, H. H., & Mikesky, A. E. (2017). Practical applications in sports nutrition. Jones &

  Bartlett Learning.
- The Academy of Nutrition and Dietetics. (2021). *Sports Nutrition for Indians* [PDF]. Available at https://higherlogicdownload.s3.amazonaws.com/THEACADEMY/de8f706f-a2d1-4ee8-8d52-404d56f75b77/UploadedImages/IND/Document/Resources/Sports_Nutrition_for_Indians_2021.pdfILSI- India, NIN, SAI. *Nutrition and hydration Guidelines for excellence in sports performance*; 2007: 48-49.
- Lal P.R. Handbook of Sports Nutrition, Friends' Publications, New Delhi, ISBN-13: 978-8172162818.
- Eberle, S. G. (2013). Endurance Sports Nutrition, 3E. Human Kinetics.

UNIT II

- Wolinsky, I., & Driskell, J. A. (Eds.). (2005). Sports nutrition: vitamins and trace elements.

  CRC Press.
- Maughan, R.J., & Shirreffs, S.M. (Eds.). (2013). Food, Nutrition and Sports Performance III (1st ed.). Routledge. https://doi.org/10.4324
- Fink, H. H., & Mikesky, A. E. (2017). Practical applications in sports nutrition. Jones &

  Bartlett Learning.
- Amawi, A., AlKasasbeh, W., Jaradat, M., Almasri, A., Alobaidi, S., Hammad, A. A., Bishtawi, T., Fataftah, B., Turk, N., Saoud, H. A., Jarrar, A., & Ghazzawi, H. (2024). Athletes' nutritional demands: a narrative review of nutritional requirements. *Frontiers in nutrition*, *10*, 1331854. https://doi.org/10.3389/fnut.2023.1331854

UNIT III

- ILSI- India, NIN, SAI. *Nutrition and hydration Guidelines for excellence in sports performance*; 2007: 48-49.

- Lal P.R. Handbook of Sports Nutrition, Friends' Publications, New Delhi, ISBN-13: 978-8172162818.
- The Academy of Nutrition and Dietetics. (2021). Sports Nutrition for Indians [PDF]. Available at https://higherlogicdownload.s3.amazonaws.com/THEACADEMY/de8f706f-a2d1-4ee8-8d52-404d56f75b77/UploadedImages/IND/Document/Resources/Sports_Nutrition_for_Indians_2021.pdf

UNIT IV

- ILSI- India, NIN, SAI. *Nutrition and hydration Guidelines for excellence in sports performance*; 2007: 48-49.
- Campbell, B. (Ed.). (2013). Sports nutrition: enhancing athletic performance. CRC Press.
- Lal P.R. Handbook of Sports Nutrition, Friends' Publications, New Delhi, ISBN-13: 978-8172162818.
- Eberle, S. G. (2013). Endurance Sports Nutrition, 3E. Human Kinetics.

Suggested Readings

- Marie Dunford. (2017) Nutrition for Sport and Exercise.
- Jeukendrup, A. (2010). Sports Nutrition-From lab to Kitchen. Meyer & Meyer Sport.
- Spano, M., Kruskall, L., & Thomas, D. T. (2017). Nutrition for Sport, Exercise, and Health.
  Human Kinetics.
- Lamprecht, M. (Ed.). (2014). Antioxidants in sport nutrition. CRC Press.
- Valenzuela, P. L. (2023). Recent Advances in Nutrition for Disease Prevention and Sports Performance Enhancement. *Nutrients*, *15*(5), 1170.
- Kloby Nielsen, L. L., Tandrup Lambert, M. N., & Jeppesen, P. B. (2020). The Effect of Ingesting Carbohydrate and Proteins on Athletic Performance: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. *Nutrients*, *12*(5), 1483. https://doi.org/10.3390/nu12051483

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

DISCIPLINE SPECIFIC ELECTIVE (DSE)

SPORT-SPECIFIC NUTRITION

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Sport-specific Nutrition	4	2	0	2		NIL

Learning Objectives

- To understand the concept of basing nutritional intake on physiological demands of training for Specific Sports
- To gain expertise in fuel and nutrient support specific to a sporting event during training, pre-competition, during competition and recovery.

Learning Outcomes

- Students will be able to demonstrate comprehension of the principles of basing nutritional intake on physiological demands of training for Specific Sports
- Students will be able to plan fuel and nutrient support during training, pre-competition, during competition and recovery, specific to a sporting event.

THEORY

(Credits 2; Hours 30)

UNIT I: Nutrition for team sports and Ultra-Endurance events 8 Hours

This unit deals with the concept of adaptation of nutrition guidelines for team games (Hockey,

Kabaddi and Cricket) and marathon covering the following aspects:

- Playing position and rules of the game; basic physiology of playing team sports; physique mapping for each event (body composition).

- Determining position wise fuel need for training and competition; quantity and timing of nutrient intake; current research on position-specific nutrition needs and fuel utilisation.

- Current literature suggestions on food intake and recovery strategies; supplement usage and dietary periodisation among the athletes; case studies on team sports and marathon

UNIT II: Nutrition for Power and Weight-Category Sports 8 Hours

This unit deals with the concept of adaptation of nutrition guidelines for specific sports requiring adherence to weight categories

- Strength and Combat sports (Sprits, Jumps, Throws, Wrestling, Weightlifting, Judo, Boxing): Game dynamics; fuel utilisation (energy and macronutrients); energy demands of the game; nutrient timing and dietary periodisation

- Weight management issues: Overemphasis on protein requirements; tailored nutrition and hydration guidelines before, during and post-training/competitions; supplement or other ergogenic aids; recovery strategies (dietary and non-dietary components).

UNIT III: Nutrition for Water Sports 6 Hours

This unit deals with the knowledge of various water-sports and the concept of adaptation of nutrition guidelines for water sports (Swimming, Rowing):

- Understanding of Water Sports
- Physiological and biochemical changes in water sports
- Common nutritional problems associated to water sports
- Guidelines specific to nutrition in water sports: Identifying individual energy and other macronutrient requirements; nutrient-timing; dietary periodisation; supplement usage.

UNIT IV: Nutrition for Nutrition for sports requiring Balance and coordination 8 Hours

This unit deals with the concept of adaptation of nutrition guidelines for balance and coordination related sports:

- **Balance related sports (Gymnastics, Golf):** Understanding playing formats and fuel utilisation (energy and macronutrients); different energy demands of balance sport; physique maintenance and weight management issues; nutrient timing and dietary periodisation; tailored nutrition and hydration guidelines before, during and post-training/competitions
- **Coordination sport (Archery, Shooting):** Playing formats and specific demands of the game; eye-hand coordination; current research relating nutrition and coordination sports performance; maintaining proper fuel and hydration in coordination sport; case studies of archers and shooters; identifying the current nutritional problems; dietary guidelines for pre, during and post- training/competitions

PRACTICAL

(Credits 2; Hours 60)

1. Menu planning for food and fluid intake during training and competition including nutrient periodisation for :
    - Hockey players/cricketers.
    - Kabaddi players
    - Sprinters and runners.
    - Tennis/Badminton.
    - Rowing.
    - Shooting/Archery.
    - Marathon
2. Menu planning for food and fluid intake during training and competition including nutrient periodisation and weight-management for:
    - Power sports.
    - Gymnastics.
3. Analysis of food labels of sports products
4. Nutritional evaluation of sports drink

Essential Readings

UNIT I

- Roberts, J. D., López-Samanes, A., & Trakman, G. (Eds.). (2024). *Nutrition for team and individual sport athletes*. Frontiers Media SA. ISBN 9782832557761.
- Fink, H. H., & Mikesky, A. E. (2017). Practical applications in sports nutrition. Jones & Bartlett Learning.

- Christoph Zinner and Billy Sperlich. (2016). Marathon Running: Physiology, Psychology, Nutrition and Training Aspects
- Ryan, M. (2012). Sports nutrition for endurance athletes. Velo Press.
- Stohs, S. J., & Kitchens, E. K. (Eds.). (2013). *Nutrition and enhanced sports performance: Muscle building, endurance, and strength*. Academic Press. ISBN 9780123964779.

UNIT II

- Jackson, C. G. R. (Ed.). (2000). *Nutrition and the Strength Athlete*. CRC Press. ISBN: 9780849381980.
- Maughan, R. J. (Ed.). (2008). Nutrition in sport (Vol. 7). John Wiley & Sons.
- Slater, G., & Phillips, S. M. (2011). Nutrition guidelines for strength sports: sprinting, weightlifting, throwing events, and bodybuilding. Journal of sports sciences, 29(sup1), S67-S77.
- Stohs, S. J., & Kitchens, E. K. (Eds.). (2013). *Nutrition and enhanced sports performance: Muscle building, endurance, and strength*. Academic Press. ISBN 9780123964779.

UNIT III

- González Andrade, C. (2025). *Nutrition and water polo* (PDF eBook). César González Andrade. Publisher date: February 5, 2025. ISBN 9798230233350.
- FINA. (2021). *Nutrition for aquatic athletes* (PDF booklet). Fédération Internationale de Natation (FINA). Available at https://resources.fina.org/fina/document/2021/02/04/5c14b311-7eba-4d2b-9114-acf13d300683/nutrition_for_aquatic_athletes_booklet_v5_final.pdf

UNIT IV

- Clark, N. (2008). *Sports nutrition guidebook* (4th ed.) [PDF]. Human Kinetics. Available at https://repository.bbg.ac.id/bitstream/1996/1/Sports_Nutrition_Guide.pdf
- Jemni, M. (Ed.). (2018). *The science of gymnastics: Advanced concepts* (2nd ed.). Routledge. ISBN 978-1-138-70192-2.
- Marcolin, G., Matej, S., & Paillard, T. (Eds.). (2022). *Postural balance control in sport and exercise* [PDF]. Frontiers in Physiology. ISBN 978-2-88976-730-4.

Suggested Readings

- Burke, L., Deakin, V., & Minehan, M. (Eds.). (2021). *Clinical sports nutrition* (6th ed.). McGraw-Hill Education.
- Campbell, B. (Ed.). (2013). Sports nutrition: enhancing athletic performance. CRC Press.
- Reaburn, P. R. (Ed.). (2014). Nutrition and Performance in Masters Athletes. CRC Press.

- Powers, S. (2014). Exercise physiology: Theory and application to fitness and performance. McGraw-Hill Higher Education.
- McArdle, W. D., Katch, F. I., & Katch, V. L. (2015). Exercise physiology: nutrition, energy, and human performance. 8th Edition, Lippincott Williams & Wilkins.

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

SEMESTER -II

DISCIPLINE SPECIFIC CORE COURSE

Food Product Development and Quality Evaluation

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Food Product Development and Quality Evaluation	4	**2**	**0**	**2**		NIL

Learning Objectives

- To impart advanced knowledge of food product innovation and systematic quality evaluation
- To ensure understanding of the New Product Development process, prototype creation, sensory/physicochemical analysis, and lifecycle management

Learning Outcomes

Upon successful completion of this course, the student will be able to

- Explain New Product Development concepts and major development stages
- Critically assess product screening, concept testing, and commercialization strategies
- Apply sensory, physicochemical, and regulatory quality evaluation methods
- Interpret feedback, consumer studies, and post-launch improvements

THEORY
(Credits 2; Hours 30)

UNIT I: Concepts and Fundamentals of New Product Development 8 Hours

This unit explores key definitions, objectives, product types, and foundational drivers of innovation in the food industry

- Definitions, scope, importance of NPD in food industry
- Types of new products: line extensions, "me-too" products, novel, functional, and health-oriented foods
- Product innovation drivers: consumer trends, technology, sustainability, regulatory environment
- Overview of global and Indian practices.

UNIT II: Stages and Strategies in Food Product Development 8 Hours

This unit covers the complete new product development process, from ideation to market launch, including reasons for product failure and lifecycle management

- The steps in NPD process: Idea generation, screening, concept development and testing, business analysis, product development, market testing, commercialization
- Integrated R&D and market approaches
- Causes of product failure, Case studies of success and failure.

UNIT III: Physicochemical and sensory evaluation 7 Hours

This unit explores sensory evaluation techniques and instrumental analyses to ensure food product safety, quality, and consumer acceptance through integrated regulatory and shelf-life assessment.

- Sensory methods: descriptive, discrimination
- Application in product development and market validation

UNIT IV: Safety and Shelf Life evaluation 7 Hours

- Instrumental methods, regulatory standards, shelf-life testing
- Product life cycle strategies and consumer feedback

PRACTICAL
(Credits 2; Hours 60)

- Develop a food prototype by selecting ingredients and employing a staged development approach.
- Standardize the recipe and systematically record all process modifications.
- Conduct sensory evaluation and perform physicochemical quality assessments and shelf-life.

- Compile a comprehensive product detailing market positioning and strategies for consumer acceptance.
- Prepare a project report on food product development and quality evaluation

Essential Reading

UNIT I

- Fuller, G. W. (2005). *New food product development* (2nd ed.). CRC Press.
- Moskowitz, H. R., Saguy, I. S., & Straus, T. (2009). *An integrated approach to new food product development*. CRC Press.

UNIT II

- Fuller, Gordon W. (2005). *New Food Product Development*, 2nd Edition, CRC Press, Boca Raton, Florida.
- Moskowitz, H. R., Saguy, I. S., & Straus, T. (2009). *An integrated approach to new food product development*. CRC Press.
- Moskowitz, H. R., Beckley, J. H., & Resurreccion, A. V. A. (2012). *Sensory and consumer research in food product design and development* (2nd ed.). Wiley-Blackwell.
- Stone, H., Bleibaum, R. N., & Thomas, H. A. (2020). *Sensory evaluation practices* (5th ed.). Academic Press.

UNIT III

- Moskowitz, H. R., Beckley, J. H., & Resurreccion, A. V. A. (2012). *Sensory and consumer research in food product design and development* (2nd ed.). Wiley-Blackwell.
- Stone, H., Bleibaum, R. N., & Thomas, H. A. (2020). *Sensory evaluation practices* (5th ed.). Academic Press.

UNIT IV

- Fuller, Gordon W. (2005). *New Food Product Development*, 2nd Edition, CRC Press, Boca Raton, Florida.
- Moskowitz, H. R., Saguy, I. S., & Straus, T. (2009). *An integrated approach to new food product development*. CRC Press.
- Moskowitz, H. R., Beckley, J. H., & Resurreccion, A. V. A. (2012). *Sensory and consumer research in food product design and development* (2nd ed.). Wiley-Blackwell.

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

DISCIPLINE SPECIFIC CORE COURSE
NUTRITION COMMUNICATION AND HEALTH PROMOTION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Nutrition Communication and Health Promotion	**4**	**3**	**0**	**1**		**Nil**

Learning Objectives

- To understand the concept of Dietary Guidelines and their relevance.
- To understand the determinants of food behavior and various models of behaviour change.
- To gain insight about planning, implementing and evaluating behaviour change communication for promotion of nutrition and health among vulnerable groups.
- To get exposure about nutrition advocacy and ethical considerations in nutrition communication.

Learning Outcomes

The students would be able to:

- Learn about the dietary guidelines of various countries and their relevance.
- Describe the inter-relationship between nutrition and health behaviour and apply various models of health behaviour in planning social and behaviour change strategy
- Learn and apply the concept of social and behaviour change communication and explain the principles of ethics in nutrition and health communication.
- Develop an understanding of the concept of nutrition advocacy.

THEORY
(Credits 3; Hours 45)

UNIT I: Dietary guidelines for nutrition and health related concerns 08 Hours

This unit lays thrust on the significance of national and international dietary guidelines in shaping public health strategies, while fostering a critical understanding of their strengths, limitations, and evolving relevance.

- National and international guidelines and their role in nutrition promotion.

- Critical appraisal of the current guidelines.

UNIT II: Nutrition and behaviour inter-relationship 07 Hours

This unit highlights the vital connection between food habits and overall health behaviour, drawing on established models and theories that explain how individuals make nutrition-related decisions. It further emphasizes a range of intervention strategies aimed at promoting healthy eating, incorporating both ecological approaches and individual-level behaviour change techniques.

- Food and health behaviour, models/ theories of health behaviour, strategies for intervention at the ecological and individual level

UNIT III: Social and Behaviour Change Communication for Nutrition and Health Promotion and ethics in SBCC 22 Hours

This unit deals with the fundamental concepts and objectives of communication for behaviour change, various approaches for nutrition and health promotion such as social mobilization and social marketing, and the planning and implementation of communication strategies aimed at promoting positive social and behavioural outcomes. It also focuses on designing effective training strategies for capacity building of trainers and provides an overview of the evaluation of social and behaviour change communication programmes. This unit also covers the crucial role of ethics in nutrition and health communication, emphasizing the responsibility of professionals to share accurate, respectful, and evidence-based information while navigating key ethical principles and contemporary concerns.

- Concept and objectives of nutrition communication for behaviour change.
- Approaches for nutrition and health promotion: Social Mobilization, Social Marketing, process etc.
- Planning of communication strategies for social and behaviour change programme.
- Designing training strategies for trainers and their capacity building.
- Implementing social and behaviour change communication intervention: an overview.
- Evaluation of social and behaviour change communication programmes.
- Significance of ethics in nutrition and health communication.
- Ethical Principles and concerns

UNIT IV: Nutrition Advocacy 08 Hours

This unit provides a comprehensive understanding of advocacy in the field of nutrition, focusing on its meaning, various types, and the tools and techniques used to influence public policies. It further highlights the vital role of advocacy in nutrition policy formulation and guides learners in the preparation of effective policy briefs.

- Meaning, types, tools and techniques and advocacy planning.
- Role of advocacy in nutrition policy formulation, preparation of policy briefs.

PRACTICAL
(Credits 1; Hours 30)

1. Formulate appropriate key messages to create awareness on feeding/diet related practices based on DGI in a vulnerable population group.

2. Design a suitable communication aid to creating awareness on healthy diet and lifestyle related practices among an identified vulnerable population group and pre-test the same.
3. Prepare one infographic on nutrition related health concern among the identified vulnerable group with in the population.
4. Develop a short tool to assess awareness on healthy food choices among the identified vulnerable group with in the population.
5. Review of communication strategies being used in any one public health nutrition programme in the community.
6. Planning of communication strategies for public health nutrition problems among vulnerable groups in the community -field testing of messages and methods.

Essential Readings

UNIT I:

- Dietary Guidelines for Indians, (2024). National Institute of Nutrition, Indian Council for Medical Research, Government of India. https://www.nin.res.in/dietaryguidelines/pdfjs/locale/DGI07052024P.pdf

UNIT II:

- Boyle, M. A. (2022). Community Nutrition in Action (8th ed.). Cengage Learning.

UNIT III:

- Vir, S.C. (2021). Public Health Nutrition in Developing Countries. Volume-II (2nd ed.) Woodhead Publishing India Pvt Ltd.
- Barth, M. M., Bell, R. A., & Grimmer (Somers), K. (Eds.). (2020). *Public health nutrition: Rural, urban, and global – Community-based practice*. Springer Publishing Company.
- Park, K. (2023). Park's Textbook of Preventive and Social Medicine (27th ed.), Jabalpur, India: Banarasidas Bhanot Publishers.

UNIT IV: Nutrition Advocacy

- How to: A guide to effective nutrition advocacy (aliveandthrive.org)
- The International Coalition for Advocacy on Nutrition (ICAN) - 1,000 Days (thousanddays.org)

Suggested Readings

- Maibach E. and Parrott R.L. (1995) Designing health messages: Approaches from Communication Theory and Public Health Practice. Sage Publications, Inc.
- USAID. Effective At-Scale Nutrition Social and Behavior Change Communication. Multi-Sectoral Nutrition Strategy 2014-2025 Technical Guidance Brief.
- McNulty J. (2013) Challenges and issues in nutrition education. Rome: Nutrition Education and Consumer Awareness Group, Food and Agriculture Organization of the UNITed Nations. Available at: www.fao.org/ag/humannutrition/nutritioneducation/en/
- USAID (2010) Behavior Change Communication (BCC). Learning Resource Package. Facilitator's Guide.

- O'Sullivan, G.A., Yonkler, J.A., Morgan, W., and Merritt, A.P. (2003) A Field Guide to Designing a Health Communication Strategy, Baltimore, MD: Johns Hopkins Bloomberg School of Public Health/Center for Communication Programs, March 2003.
- Nutrients Requirements for Indians, (2020). A report of the expert group. National Institute of Nutrition, Indian Council for Medical Research, Government of India. https://www.nin.res.in/RDA_Full_Report_2024.html
- Vir, S.C. (2023). Child, Adolescent and Woman Nutrition in India: Public Policies, Programmes and Progress. KW Publishers Pvt. Ltd.

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

DISCIPLINE SPECIFIC ELECTIVE
PRECISION NUTRITION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
Precision Nutrition	**4**	**3**	**0**	**1**		**Nil**

Learning Objectives:

- To understand the concepts of Precision nutrition, its elements, nutritional indicators and the role of artificial intelligence in Precision nutrition.
- To gain a foundational understanding of **DNA structure**, how **genotypes** translate into **phenotypes,** and how variations such as **mutations, SNPs, and CNVs** influence individual biological differences
- To understand the key molecular biology techniques used to analyze proteins and nucleic acids
- To understand the **composition and diversity of the human gut microbiota** and how the gut microbiota communicates with the brain through the **gut–brain axis**, influencing mood, behavior, and neurological health.

Learning Outcomes:

The students would be able to:

- **Understand the principles of Precision Nutrition** and identify its key components, nutritional biomarkers, and the ways artificial intelligence contributes to personalized dietary recommendations.
- **Describe DNA structure and genetic mechanisms**, and analyse how genotypes translate into phenotypes, including the impact of mutations, SNPs, and CNVs on individual variability in nutritional responses.
- **Apply core molecular biology techniques** such as electrophoresis, PCR-based methods, sequencing, and immunoassays—to investigate proteins, genes, and molecular markers relevant to nutrition and health.

- **Evaluate the diversity and functions of the human gut microbiota** and explain how microbial communities interact with the brain through the gut–brain axis to influence metabolism, behaviour, and overall health.

THEORY

(Credits 3; Hours 45)

UNIT I: Introduction to Precision Nutrition and Artificial Intelligence (AI) 8 Hours

Students will be introduced about the Precision nutrition, its elements, nutritional indicators and the role of artificial intelligence in Precision nutrition.

- Introduction to Precision Nutrition
- Elements in developing Precision Nutrition
- Nutritional indicators (Anthropometry, clinical, biochemical, diet), biomarkers, physical activity and Precision Nutrition
- Role of AI in Precision Nutrition

UNIT II: Nutrigenomics and Metabolomics 15 Hours

Students will gain a foundational understanding of **DNA structure**, how **genotypes** translate into **phenotypes,** and how variations such as **mutations, SNPs, and CNVs** influence individual biological differences. They will explore **nutrigenomics, metabolomics**, the **epigenome**, and the **exposome** to understand how diet and environmental factors shape gene activity.

- DNA structure, Genotype & Phenotype, Gene variations, Mutations, SNPs, CNVs.
- Nutrigenomics, Metabolomics, Epigenome, Exposome
- Epigenetics and its mechanisms: DNA methylation, Histone modification and non-coding RNA
- The Effect of Micro Nutrients, Macro Nutrients and Bioactive Components on Gene Expression
- Altered Gene expression in Chronic Conditions- Obesity, Type-II diabetes, cardiovascular diseases and cancer.
- Circadian Rhythm, gene expression and Chronobiology
- Metabolomics in understanding relation between diet, metabolism and health
- Tools and Techniques to analyze metabolites from food and metabolic processes-Mass spectrometry and NMR

UNIT III: Molecular techniques in Nutritional genomics and Metabolomics 15 Hours

Students will gain an understanding of key molecular biology techniques used to analyze proteins and nucleic acids. They will learn the principles and applications of **SDS-PAGE, 2D gel electrophoresis,** and **western blotting** for protein separation and identification. They will also understand how **ELISA** is used to detect and quantify specific proteins or antibodies in biological samples.

- Introduction to SDS-PAGE, 2D- gel electrophoresis and western blotting
- Enzyme Linked Immunosorbent Assay (ELISA)
- Polymerase chain reaction (PCR)
- RT-PCR and Real time PCR.
- Introduction to next generation DNA sequencing
- Introduction to Microarray and its applications

UNIT IV: Diet and Gut Microbiota 7 Hours

Students will develop an understanding of the **composition and diversity of the human gut microbiota**, including the major microbial groups that inhabit the digestive system. They will explore how the gut microbiota communicates with the brain through the **gut–brain axis**, influencing mood, behavior, and neurological health.

- Human Gut Microbiota Composition
- Microbiota and Gut-brain Axis
- Influence of Diet on Gut Microbiota
- Microbiota and its relation with Obesity and other disease conditions (Type II Diabetes, CVDs, IBD, Neurodegenerative diseases)

PRACTICALS

(Credit 1; Hours 30)

1. Evaluation of case studies from the published literature to understand precision nutrition.
2. Assessment of Munich Chronotype questionnaire and Pittsburgh Sleep Quality Index
3. Genomic DNA isolation and its purity check
4. Agarose Gel electrophoresis
5. DNA quantification using Diphenylamine/UV-method
6. RNA Quantification using orcinol/ UV-method
7. Lab visit for demonstration of PCR
8. Interpretation of Genetic tests for various disease conditions.

Essential Readings:

UNIT I

- Kirk, D., Catal, C., & Tekinerdogan, B. (2021). Precision nutrition: A systematic literature review. *Computers in Biology and Medicine*, *133*, 104365.
- Liang, Y., Xiao, R., Huang, F., Lin, Q., Guo, J., Zeng, W., & Dong, J. (2024). AI nutritionist: Intelligent software as the next generation pioneer of precision nutrition. *Computers in biology and medicine*, *178*, 108711.

UNIT II

- Simopoulos, A. P., & Ordovás, J. M. (Eds.). (2004). *Nutrigenetics and nutrigenomics* (Vol. 93). Karger Medical and Scientific Publishers.
- Carlberg, C., Ulven, S. M., & Molnár, F. (2016). *Nutrigenomics*. Berlin, Germany: Springer.
- Paro, R., Grossniklaus, U., Santoro, R., & Wutz, A. (2021). *Introduction to Epigenetics*. Springer Nature.
- Singh, V., Mani, I. (2023). *Epigenetics in Health and Disease*. Academic Press.

UNIT III

- Kumar, P. (2016). *Tools and Techniques of Biophysics and Molecular Biology.* Pathfinder Publication.
- Wilson, K., Hofmann, A., Walker, J. M., & Clokie, S. (Eds.). (2018). *Wilson and Walker's principles and techniques of biochemistry and molecular biology*. Cambridge university press.

UNIT IV

- Ramos, S., & Martín, M. Á. (2021). Impact of diet on gut microbiota. *Current Opinion in Food Science*, *37*, 83-90.

Suggested Readings:

1. de Toro-Martín, J., Arsenault, B. J., Després, J. P., & Vohl, M. C. (2017). Precision nutrition: a review of personalized nutritional approaches for the prevention and management of metabolic syndrome. *Nutrients*, *9*(8), 913.
2. Wang, D. D., & Hu, F. B. (2018). Precision nutrition for prevention and management of type 2 diabetes. *The lancet Diabetes & endocrinology*, *6*(5), 416-426.
3. Voruganti, V. S. (2022). Precision nutrition: recent advances in obesity. *Physiology*.
4. Liang, Y., Xiao, R., Huang, F., Lin, Q., Guo, J., Zeng, W., & Dong, J. (2024). AI nutritionist: Intelligent software as the next generation pioneer of precision nutrition. *Computers in biology and medicine*, *178*, 108711.
5. Ferreira, D. D., Ferreira, L. G., Amorim, K. A., Delfino, D. C. T., & Ferreira, A. C. B. H. (2025). Assessing the Links Between Artificial Intelligence and Precision Nutrition. *Current Nutrition Reports*, *14*(1), 1-17.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

CHALLENGES IN CLINICAL NUTRITION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Challenges in Clinical Nutrition	**4**	**2**	**0**	**2**		**Nil**

Learning Objectives

- To understand the process of diet counselling in nutrition care process.
- To understand the nutrition related challenges faced by specific groups like elderly and paediatric population.
- To understand the nutritional management of cancer patients
- To understand the latest technologies which can aid in nutrition care

Learning Outcomes

Student will be able to:

- Use the principles of dietary counselling in various diseases.
- Acquire an in depth understanding about clinical nutrition challenges faced by elderly and children
- Plan diets for cancer patients undergoing different types of therapy
- Acquire skills to use latest technologies in the nutrition care process

THEORY

(Credits 2; Hours 30)

UNIT I: Diet Counselling **4 Hours**

Students will be introduced to the concept of nutrition counselling, Behaviour Change Communication models and strategies for counselling

- Concept and importance of counselling in the nutrition care process
- Understanding dietary patterns and food choices and their impact on counselling
- Behaviour Change Communication and Models for behaviour change
- Counselling strategies

UNIT II: Geriatric and Paediatric Nutrition 16 Hours

Students will be introduced to the concept of geriatric and paediatric nutrition, common clinical nutrition related problems faced by elderly and children, and strategies for nutritional management.

- Definition of ageing, geriatric and paediatric nutrition, physiological and biochemical changes impacting nutrition among elderly and children
- Assessment of nutritional status of older adults and children in clinical/hospital setting
- Major nutritional and health problems during old age including drug nutrient interactions for selected health conditions:
  Musculoskeletal: osteoporosis, sarcopenia, arthritis and frailty.
  Neurological and cognitive: Mild Cognitive Impairment, Alzheimer's disease, Vascular and Lewy Body Dementia, Parkinson's disease, depression
  Metabolic: obesity, malnutrition, constipation, dehydration, diabetes, hypertension and cardiovascular diseases
- Nutritional management of Inborn Errors of Metabolism in infants and children - phenylketonuria, maple syrup urine disease, galactosemia, congenital hypothyroidism, congenital adrenal hyperplasia
- Epilepsy in children – special diets for management (Ketogenic diet, Atkins diet)
- Nutritional challenges in developmental disabilities in children- autism spectrum disorders, cerebral palsy, attention deficit hyperactivity disorder
- Paediatric diabetes: Type 1 DM – management and impact on growth and management
- Nephrotic syndrome and CKD in children - Impact on growth and management

UNIT III: Nutrition and Cancer 6 Hours

Students will be introduced to the concept of onco-nutrition and nutritional management of cancer patients.

- Carcinogenesis and Mutagenesis- Diet-Cancer relationship
- Nutrition care process for cancer patients– nutrition, screening and assessment, goals of nutrition care and intervention
- Nutritional implications of cancer therapy – chemotherapy, radiation, biotherapy, hormone, immunotherapy.
- Role of food in cancer prevention– fibre, antioxidants, phytochemicals

UNIT IV: New technology in nutrition practice **4 Hours**

Students will be introduced to the newer concepts in nutrition like AI in nutrition, Chrono and nano nutrition, diet and mental health and smart health technologies.

- Applications of Artificial Intelligence in nutrition and dietetics and AI sources related to nutrition
- Microbiome and nutrition, chrono nutrition and nano nutrition
- Diet and mental health
- Application of smart health care digital devices in clinical nutrition service

PRACTICAL
(Credits 2; Hours 60)

Planning and preparation of diets and dietary counselling for following diseases

1. Osteoporosis
2. Sarcopenia
3. Alzheimer's Disease
4. Inborn errors (any one)
5. Tube feed for cancer patient
6. Epilepsy
7. Neurodevelopmental disorder (ADHD/Autism/cerebral palsy)
8. Paediatric Kidney disease
9. Type I diabetes (Paediatric)
10. Depression

Essential Readings

UNIT I

Students will be introduced to the concept of nutrition counselling, Behaviour Change Communication models and strategies for counselling

- Narula Uma. Communication Models (2023); Atlantic Publishers and Distributors (P) Ltd ISBN 8126906766
- Mahan, L.K. and Escott-Stump, S. (2021): Krause's Food Nutrition and Nutrition Care Process, 16th Edition, Elsevier Pvt. Ltd. ISBN 032381025X
- Snetselaar L. (2009). Nutrition Counseling Skills for the Nutrition Care Process. Fourth Ed. Sudbury, Massachusetts: Jones Bartlett Publishers. ISBN-13: 978-0-7637-2960-8
- Holli B Betsy and Beto A Judith. (2014). Nutrition Counseling and Education Skills for Dietetics Professionals. Sixth edition. USA: Lippincot Williams and Wilkins; Wolters Kluwer. ISBN-10: 1451120389

UNIT II

Students will be introduced to the concept of geriatric and paediatric nutrition, common clinical nutrition related problems faced by elderly and children, and strategies for nutritional management.

- Indian Dietetics Association, (2018) Clinical Dietetics Manual, 2nd Edition. Elite Publishing House Pvt. Ltd.
- Khanna K, Gupta S, Seth R, Passi SJ, Seth R, Mahna R, Puri S (2013). Textbook of Nutrition and Dietetics.2nd Edn. Phoenix Publishing House Pvt. Ltd.
- Raymond, J.L. and Morrow, K. (2020) Krause and Mahan's Food & the Nutrition Care Process. 15th ed. Saunders-Elsevier
- Seth, V. and Singh K. (eds.) (2024) Principles of Medical Nutrition Therapy for Positive Clinical Outcomes, 2nd Edition. Elite Publishing House Pvt. Ltd.
- Mehta, P and Chouhan, K (2016) Ageing, Nutrition and Health. Kalpaz Publication
- Goday, P.S and Walia, C (Eds) (2022) Paediatric Nutrition for Dietitians. Taylor & Francis Ltd. CRC Press
- ESPEN guideline on clinical nutrition and hydration in geriatrics. DOI link: https://doi.org/10.1016/j.clnu.2018.05.024
- ESPEN guideline clinical nutrition in neurology. DOI: 10.1016/j.clnu.2017.09.003

UNIT III

Students will be introduced to the concept of onco-nutrition and nutritional management of cancer patients.

- Raymond, J.L. and Morrow, K. (2020) Krause and Mahan's Food & the Nutrition Care Process. 15th ed. Saunders-Elsevier
- Seth, V. and Singh K. (eds.) (2024) Principles of Medical Nutrition Therapy for Positive Clinical Outcomes, 2nd Edition. Elite Publishing House Pvt. Ltd.
- Shivshankar, T. (2025) Onco-nutrition: Bridging Cancer Care and Nutritional Science Publisher: Sundaram Digital Publication House. ISBN: 9788196975562
- Narimatsu, H., & Yaguchi, Y. T. (2022). The Role of Diet and Nutrition in Cancer: Prevention, Treatment, and Survival. *Nutrients*, *14*(16), 3329. https://doi.org/10.3390/nu14163329

UNIT IV

Students will be introduced to the newer concepts in nutrition like AI in nutrition, Chrono and nano nutrition, diet and mental health and smart health technologies.

- de Oliveira Melo, N. C., Cuevas-Sierra, A., Souto, V. F., & Martínez, J. A. (2024). Biological Rhythms, Chrono-Nutrition, and Gut Microbiota: Epigenomics Insights for Precision Nutrition and Metabolic Health. *Biomolecules*, *14*(5), 559. https://doi.org/10.3390/biom14050559
- Grajek, M., Krupa-Kotara, K., Białek-Dratwa, A., Sobczyk, K., Grot, M., Kowalski, O., & Staśkiewicz, W. (2022). Nutrition and mental health: A review of current knowledge about the impact of diet on mental health. *Frontiers in nutrition*, *9*, 943998. https://doi.org/10.3389/fnut.2022.943998

Suggested Readings

- Chowdhary S.R and Aeri B.T. (2023) Textbook of Food Science and Nutrition. Aarahan Publishers. ISBN:978-93-87270-08-4 https://amzn.eu/d/blLz8S8
- Gibney MJ, Elia M, Ljungqvist &Dowsett J. (2005) Clinical Nutrition. The Nutrition Society Textbook Series. Blackwell Publishing Company
- ICMR (2020) Estimated Average Requirements and Recommended Dietary Allowances for Indians. Published by National Institute of Nutrition, Hyderabad.
- Joshi Y K.(2008) Basics of Clinical Nutrition 2nd ed. Jaypee Brothers Medical Publishers
- Longvah T, Ananthan R, Bhaskarachary K and Venkaiah K (2017). Indian Food Composition Tables. National Institute of Nutrition, ICMR, Hyderabad.
- Puri S, Bhagat A, Aeri, BT, Sharma A (2019). Food Exchange List: A Tool for meal Planning. Elite Publishing House. New Delhi.
- Shils, M.E., Shike, M, Ross, A.C., Caballero B and Cousins RJ (2005) Modern Nutrition in Health and Disease. 10th ed. Lipincott, William and Wilkins.
- Siddhu A, Bhatia N, Singh K, Gupta S (2017). Compilation of food exchange list, technical series 6, Lady Irwin College, University of Delhi. Publ. Global Books Organisation, Delhi
- Williams, S.R. (2001) Basic Nutrition and Diet Therapy. 11th ed. Times Mirror Mosby College Publishing
- Racz B., Duskova M., Starka L., Hainer V., Kunesova M. Links between the circadian rhythm, obesity and the microbiome. Physiol. Res. 2018;67:S409–S420.
- https://www.cancer.gov/about-cancer/treatment/side-effects/nutrition

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
NUTRITIONAL CARE OF THE ELDERLY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Nutritional Care of the Elderly	4	3	0	1		Nil

Learning Objectives

- To acquire knowledge about the physiological, metabolic, and psychosocial changes associated with aging and their impact on nutritional status in the elderly population.
- To comprehend the macro- and micronutrient requirements, dietary recommendations, and nutritional guidelines for older adults.
- To identify and assess common nutrition-related health conditions, risks and drug nutrient interactions among elderly.
- To apply standardized nutritional assessment tools, dietary planning methods, and communication strategies for effective nutrition management.

Learning Outcomes

The students would be able to:

- Discuss the biological, sociocultural, and behavioural dimensions influencing elderly nutrition.
- Assess and interpret the nutritional status and risks among aged individuals using appropriate assessment tools.
- Formulate and justify evidence-based dietary plans and nutrition interventions suitable for elderly health conditions.
- Communicate and counsel using appropriate IEC material for families and caregivers.

THEORY
(Credits 3; Hours 45)

UNIT I: Introduction to Aging and Nutrition 12 Hours

This unit highlights the concept of aging process, age related physiological changes, nutrition associated health issues, socio cultural factors and challenges of elderly care.

- Process of aging, physiological changes and functional decline
- Nutrition-related health issues such as undernutrition, obesity, sarcopenia, osteoporosis, and anemia
- Interplay between nutrition and chronic diseases (diabetes, cardiovascular diseases, dementia), association between nutritional deficiencies, functional decline and frailty among elderly
- Socio-cultural factors influencing elderly nutrition
- Demographic trends and challenges of elderly care in India
- National Policy on Older Persons (NPOP) and National Programme for Health Care of Elderly (NPHCE)

UNIT II: Nutritional Requirements and Nutritional Assessment of the Elderly 12 Hours

This unit highlights specific nutrient needs of the elderly, nutritional assessment and life style modification for healthy aging.

- Macro- and micronutrient needs specific to elderly individuals
- Changes in energy metabolism and hydration needs in old age
- Use of standardized nutritional assessment techniques (MNA, GNRI, CGA)
- Utilizing interpretation and assessment outcomes to guide intervention planning
- Nutrition guidance and lifestyle modification for healthy aging

UNIT III: Dietary Recommendations and Nutritional Management for Various Health Conditions 17 Hours

This unit focuses on Indian dietary guidelines for elderly, appropriate diets and drug nutrient interactions

- Indian dietary guidelines for elderly and dietary recommendations
- Balanced, culturally appropriate diets for elderly with varying health conditions
  - Gastrointestinal disorders – Flatulence, Constipation, GERD, Diarrhoea
  - Weight Imbalances – Obesity, Underweight
  - Hypertension, Dyslipidemias, Diabetes Mellitus
  - Osteoporosis, Arthritis
  - Neurological disorders: Dementia, Parkinsons Disease, Alzheimer's Disease
- Nutrient and drug Interactions, role of functional foods in aging, Use of nutraceuticals and supplements

UNIT 1V: Communication strategies for effective Counselling to promote healthy aging
4 Hours

This unit focuses on the communication strategies to address the age related nutrition needs, chronic disease conditions and promotion of healthy life style for healthy aging

- Educational and counseling strategies using appropriate IEC materials addressing multiple chronic disease conditions in elderly
- Addressing barriers and enablers for healthy eating specific to elderly

PRACTICAL
(Credits 1; Hours 30)

1. Dietary intake assessment using 24-hour recall and food frequency questionnaires, adaptations of assessment tools to address short term memory loss among elderly
2. Demonstration of measuring anthropometric parameters relevant to elderly nutrition (BMI, mid-upper arm circumference, proxy measurements for height).
3. Diet planning for elderly with diabetes, hypertension, osteoporosis, and digestive disorders.
4. Planning and preparation of specialized therapeutic recipes (soft diet, high-protein snacks, low sodium meals)
5. Planning of Cyclic Menu for residential institutions for elderly accommodating regional preferences and medical conditions.
6. Designing culturally appropriate nutrition education materials.
7. Field visit or virtual tours to community or government elderly nutrition programs and evaluation of existing nutrition interventions for elderly.

Essential Readings

UNIT I

- Agarwal, E., Miller, M., Yaxley, A., & Isenring, E. (2024). Malnutrition in the elderly: A narrative review. *Maturitas*, 128, 1-12.
- National Policy on Older Persons (NPOP) and National Programme for Health Care of Elderly (NPHCE) Document, Government of India

UNIT II

- Barry M., &Murphy, R. (2025). *Geriatric Nutrition: Comprehensive Guide for Clinical Practice (2nd ed.).* Springer.
- Kaiser, M. J., Bauer, J. M., & Schroll, M. (2025). Assessment tools for nutritional status in older persons: MNA and beyond. *Clinical Nutrition*, 44(1), 19-28
- Keller, H. H., & Goy, R. (2023). *Nutrition and Aging: Assessment and Treatment of Nutrition-Related Health Problems*. CRC Press.

- Raymond, J. L., & Mahan, L. K. (Eds.). (2024). *Krause and Mahan's Food and the Nutrition care process (19th ed.*). Elsevier.

UNIT III

- Brownie, S., & Houweling, T. A. J. (2024). Nutritional interventions for sarcopenia in older adults: A systematic review. *Journal of Nutrition, Health & Aging,* 28(4), 402–412
- Dietary Guidelines for Indians (2024) *Dietary Guidelines for Indians: A manual*., NIN
- McIntosh, S. N. (2021). *Williams' Basic Nutrition and Diet Therapy (16th ed.).* Elsevier.
- Tucker, K. L., Duggan, C. P., Jensen, G. L., & Peterson, K. E. (Eds.). (2024). *Modern Nutrition in Health and Disease (12th ed.*). Jones & Bartlett Learning.

UNIT IV

- Miller A, Steinle N (2020) Barriers to Healthy Eating in the Elderly; A National and Global Perspective. J Hum Nutr Food Sci 8(1): 1130.
- Mohan, S., & Singh, A. (2024). Behavior change communication strategies in elderly nutrition programs: Evidence from India. *Nutrition and Health*, 30(2), 123–134.

Suggested Reading

- Gosh, S., & Reddy, V. (2023). Nutritional challenges and solutions in India's aging population. *Indian Journal of Public Health*, 67(2), 115–121.
- IFCT (2017) *Indian Food Composition Tables*, NIN
- Longvah, T., Ananthan, R., Bhaskarachary, K. and Venkaiah, K. (2017). Indian Food Composition Tables. National Institute of Nutrition, ICMR, Hyderabad.
- World Health Organization. (2024). *Integrated care for older people: Guidelines on community-level interventions to manage declines in intrinsic capacity* (WHO/NMH/NMA/20.4). World Health Organization.
- Yen, C., & Lin, S. (2024). Nutrition and chronic disease prevention in the elderly: Current perspectives. *Frontiers in Nutrition*, 11, Article 785632.
- Zeng, Y., & Xiao, S. (2025). Advances in nutritional pharmacology relevant to aging populations. In S. R. Murphy & J. T. Lee (Eds.), *Pharmacology and Nutrition in Aging* (pp. 115-143). Elsevier.
- The Encyclopedia of Ageing. 4th Edition Vol I and Vol II Editor Chief- Richard Schulz. Assoc Editors- Linda Noelker, Kenneth Rockwood, Richard Sprott. 2006. Springer Publishing Company. New York.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
PROGRAMME PLANNING IN PUBLIC HEALTH NUTRITION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Programme Planning in Public Health Nutrition	**4**	**2**	**0**	**2**		**Nil**

Learning Objectives

- To understand the planning and management of public health nutrition programmes.
- To gain insight into the process of programme monitoring and evaluation.
- To understand the concept of nutritional surveillance.
- To get exposure to the key components of nutrition in emergency and disaster situations.

Learning Outcomes

The students would be able to:

- Become familiar with the process of planning and management of public health nutrition programmes.
- Apply monitoring and evaluation concepts in public health nutrition programmes and interpret programme indicators.
- Describe nutritional surveillance systems, including their purpose, components, and role in public health decision-making.
- Identify nutrition-related challenges during emergencies/disasters and recommend strategies to tackle them.
- Acquire skills in conducting situational analysis/needs assessment, developing action plans for public health nutrition programmes, and their evaluation.

THEORY
(Credits 2; Hours 30)

UNIT I: Planning Public Health Nutrition Programmes 14 Hours

This unit deals with the process involved in planning public health nutrition programmes. It emphasizes the importance of understanding community needs, setting appropriate goals, selecting interventions, and designing effective implementation and evaluation strategies.

- Planning process in public health nutrition – community needs assessment/situational analysis, setting goals and objectives, selecting indicators, selecting interventions, planning for programme implementation and resources, planning for programme monitoring and evaluation, planning for programme termination, stakeholder participation in programme management

UNIT II: Programme Monitoring and Evaluation 8 Hours

This unit focuses on the essential concepts, tools, and processes involved in monitoring and evaluating public health nutrition programmes.

- Programme monitoring: Definition, purpose, indicators, data collection and analysis, monitoring tools (e.g. Health Management Information System, Poshan tracker)
- Programme evaluation: Definition, purpose, types, indicators, steps of evaluation, strategies for data collection, evaluation design

UNIT III: Nutrition surveillance 4 Hours

This unit deals with the core concepts and components of nutrition surveillance and highlights its significance in programme planning and public health decision-making.

- Definition, objectives, indicators, agencies involved in nutrition surveillance
- Nutrition surveillance for programme planning – Triple A approach

UNIT IV: Nutrition in Emergencies and Disasters 4 Hours

This unit deals with the nutritional challenges that arise during emergencies and disaster situations, focusing on the needs of vulnerable groups and the strategies used for assessment, relief, and rehabilitation.

- Natural and manmade disasters resulting in disaster situations
- Nutritional problems in emergencies in vulnerable groups
- Assessment and surveillance of affected population groups
- Nutritional relief and rehabilitation in disaster situations

PRACTICAL
(Credits 2; Hours 60)

1. Field visit to observe implementation of a national public health programme.
2. Critical appraisal of ongoing national public health nutrition programmes.
3. Prepare a fact sheet to present a situational analysis of an identified public health nutrition problem.
4. Prepare a tool to collect data for the situational analysis of an identified public health nutrition problem.
5. Identify key interventions and present evidence on the effectiveness and efficacy of the chosen intervention for an identified public health nutrition problem.
6. Identification of key indicators for evaluation of national public health nutrition programmes.
7. Plan a suitable action plan for: Conducting situational analysis/community needs assessment of an identified public health nutrition problem, or For effectively managing an identified public health nutrition problem, or Conducting an evaluation for public health nutrition programme.

Essential Readings

UNIT I

- Vir, S.C. (2021). Public Health Nutrition in Developing Countries. Volume-II (2nd ed.) Woodhead Publishing India Pvt Ltd.
- Park, K. (2023). Park's Textbook of Preventive and Social Medicine (27th ed.), Jabalpur, India: Banarasidas Bhanot Publishers.
- Boyle, M. A. (2022). Community Nutrition in Action (8th ed.). Cengage Learning.

UNIT II

- Vir, S.C. (2021). Public Health Nutrition in Developing Countries. Volume-II (2nd ed.) Woodhead Publishing India Pvt Ltd.
- Boyle, M. A. (2022). Community Nutrition in Action (8th ed.). Cengage Learning.

UNIT III

- Al Jawaldeh, A., Osman, D., Tawfik, A., & World Health Organization, Regional Office for the Eastern Mediterranean. (2013). *Food and nutrition surveillance systems: Technical guide for the development of a food and nutrition surveillance system for countries in the Eastern Mediterranean Region* (WHO Regional Publication, Eastern Mediterranean Series No. 33). WHO Regional Office for the Eastern Mediterranean. https://applications.emro.who.int/dsaf/EMROPUB_2013_EN_1576.pdf
- Tuffrey, V. (2016). *Nutrition surveillance systems: Their use and value* (Report). Save the Children UK.

https://resourcecentre.savethechildren.net/pdf/nutrition_surveillance_systems.pdf

UNIT IV

- World Health Organization. (2000). Management of nutrition in major emergencies. WHO. https://www.who.int/publications
- World Health Organization, UNITed Nations High Commissioner for Refugees, UNITed Nations Children's Fund, & World Food Programme. (2004, February 23). Food and nutrition needs in emergencies (Technical document). https://www.who.int/publications/i/item/food-and-nutrition-needs-in-emergencies
- World Health Organization Regional Office for the Eastern Mediterranean. (n.d.). *Nutrition in emergencies*. WHO. https://www.emro.who.int/nutrition/nutrition-in-emergencies/
- Vir, S. C. (Ed.). (2011). *Public health nutrition in developing countries* (2-volume set). Woodhead Publishing India.

Suggested Readings

- Bamji, M.S., Hemalatha, R., and Reddy, G.B. (2025). Textbook of Human Nutrition, 5th edition. CBS Publishers and Distributors.
- Ministry of Health & Family Welfare. (2019). *National Family Health Survey (NFHS-5) India 2019–21: State fact sheets*. Government of India. https://rchiips.org/nfhs/factsheet_NFHS-5.shtml
- Ministry of Health & Family Welfare. (2018). *Comprehensive National Nutrition Survey (CNNS) India 2016–18: National report*. Government of India & UNICEF.
- Ministry of Women & Child Development. (2021). *POSHAN Abhiyaan: Operational guidelines*. Government of India. https://poshanabhiyaan.gov.in
- Ministry of Health & Family Welfare. (2020). *Health Management Information System (HMIS) manual*. Government of India.
- NITI Aayog. (2017). *National nutrition strategy*. Government of India. https://library.niti.gov.in/cgi-bin/koha/opac-retrieve-file.pl?id=a0185815c4868f92466245d161108c36
- WFP India & National Institute of Disaster Management (NIDM), Ministry of Home Affairs, Government of India. (2022, November 11). Ensuring food and nutrition security in climate fragilities and disasters: The 31 inspiring practices. World Food Programme. https://www.wfp.org/publications/ensuring-food-and-nutrition-security-climate-fragilities-and-disasters-31-inspiring
- Vir, S.C. (2023). Child, Adolescent and Woman Nutrition in India: Public Policies, Programmes and Progress. KW Publishers Pvt. Ltd.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
PLANT PRODUCTS PROCESSING AND PRESERVATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Plant Products Processing and Preservation	**4**	**3**	**0**	**1**		**Nil**

Learning Objectives

- To understand the composition, structure, and functional properties of major plant foods and relate them to processing behaviour and nutritional quality.
- To gain comprehensive knowledge of traditional and modern processing technologies used for milling, extraction, preservation, minimal processing, and value addition in plant-based foods.
- To develop the ability to evaluate post-harvest physiological changes, quality attributes, and apply scientific principles to reduce post-harvest losses.
- To develop practical skills in assessing plant food quality and preparing value-added, exotic and healthy products from cereals, pulses, oilseeds, and fruits & vegetables.

Learning Outcomes

The students would be able to:

- Explain the structure, composition, and functional properties of major plant food groups and their relevance to processing and nutrition.
- Compare traditional and modern processing methods and their effects on quality, safety, and nutritional value of plant foods.
- Evaluate physicochemical, nutritional, and sensory changes during processing, preservation, and value addition of plant foods.
- Demonstrate practical skills in quality assessment and small-scale processing of cereals, pulses, oilseeds, fruits, and vegetables.

THEORY
(Credits 3; Hours 45)

UNIT I: Cereals, Millets & Coarse Grains Technology 15 Hours

This unit deals with the structure, composition, nutritive value, milling and utilisation of products of cereals and millets.

- Structure of wheat grain, nutritive value and composition, physical and chemical properties.
- Milling of wheat: Roller milling process, flour fractions, flour treatments: bleaching, maturing agents, products and by-products of milling process.
- Introduction to other cereals and millets: Rice, maize, oats, rye, corn, pearl millet; their nutritional importance and commercial value (Puffed rice, Rice flakes, parboiling of rice, extruded and fortified rice).

UNIT II: Pulse & Oilseed Processing Technology 8 Hours

This unit deals with the composition, nutritive value, processing of pulses and different oilseeds and methods of texturization of plant protein.

- Pulses: Composition, protein quality, antinutritional factors, soaking, germination, fermentation
- Oilseeds: Seed structure & composition, Pre-processing: cleaning, conditioning, cracking, flaking, Mechanical & solvent extraction, oil refining: physical and chemical
- TVP, high-moisture extrusion, plant-based meat applications

UNIT III: Post-harvest management of Fruits & Vegetables 10 Hours

This unit deals with the post-harvest changes and management of fruits and vegetables.

- Post-Harvest Physiology & Quality: Maturity indices, ripening physiology, Climacteric vs non-climacteric, sorting, grading, washing, peeling, minimal processing, control of enzymatic browning
- Post-harvest changes and management of fruits and vegetables: Climacteric rise, horticultural maturity, physiological maturity, maturity indices, and process of ripening-physical and chemical changes. Causes of post-harvest losses, measures to reduce post–harvest losses in F & V, CA storage, and MAP.

UNIT IV: Fruits & Vegetables Processing **12 Hours**

This unit deals with the processing and preservation of fruits and vegetables.

- Canning: Selection of fruits and vegetables, process of canning, factors affecting the process- time and temperature, containers of packing, lacquering, syrups and brines for canning, spoilage in canned foods.
- Jams, jellies and marmalades: Introduction, Jam: Constituents, selection of fruits, processing & technology, Jelly: Essential constituents (Role of pectin, ratio), Theory of jelly formation and defects in jelly.
- Tomato products: Selection of tomatoes, pulping & processing of tomato juice, tomato puree, paste, ketchup, sauce and soup**.**

PRACTICAL
(Credits 1; Hours 30)

List of Experiments

- Determination of physical and chemical properties of wheat
- Determination of gluten quality and quantity
- Sedimentation value of flour/ Fermenting power of yeast
- Evaluation of flour suitability through baking tests
- Preparation of plant protein-based product- soy/pulse protein-based tofu, soymilk, high protein drink, soy yoghurt, almond protein bars
- Determination of maturity indices of fruits & vegetables-TSS, Sugar:acid, TA, size & shape, weight & firmness.
- Processing of tomato products (ketchup and sauce).
- Processing of jams, jellies and marmalades.

Essential Readings

UNIT I

- Kent, N. L. (1994). *Technology of cereals* (4th ed.). Pergamon Press.
- Matz A Samuel, *Bakery Technology and Engineering*.
- Food Safety and Standards Authority of India. (2022). Food safety and testing manuals. Government of India.

UNIT II

- Chakraverty, A. (2001). *Post-harvest technology of cereals, pulses and oilseeds* (3rd ed.). Oxford & IBH Publishing Co. Pvt. Ltd.
- Manay, S. and Sharaswamy, M. (1987). Food Facts and Priniciples. Wiley Eastern Publisher.

UNIT III

- Wills, R., McGlasson, B., Graham, D., Joyce, D., & Geeson, J. (2007). *Postharvest: An introduction to the physiology and handling of fruit and vegetables* (5th ed.). CABI Publishing.
- Salikhe D K and Kadam SS (1995) *Handbook of fruit science and technology. Production Composition, Storage and processing*. Marcel Decker inc, New York

UNIT IV

- Siddapa, GS (1986) *Preservation of Fruits and Vegetables*, ICAR Publication
- Srivastava, R. P., & Kumar, S. (1998). *Fruit and vegetable preservation: Principles and practices* (3rd ed.). CBS Publishers & Distributors.
- Salikhe D K and Kadam SS (1995) *Handbook of fruit science and technology. Production Composition, Storage and processing*. Marcel Decker inc, New York

Suggested Reading

Handbook of Research on Food Processing and Preservation Technologies (5 Vols) - Eds. Birwal, Goyal, et al. (Taylor & Francis/Apple Academic Press, 2021-2022)

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
FOOD PROCESSING TECHNOLOGIES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Food Processing Technologies	**4**	**2**	**0**	**2**		**Nil**

Learning Objectives

- Understand the basic scientific principles governing microbial inactivation and quality changes under different thermal, non-thermal, and low-temperature processing conditions.
- Analyze and determine the critical process parameters (e.g.,F, D, z values; pressure, time, electric field strength) required to achieve specific safety and quality targets.
- Identify the operational mechanics, advantages, and limitations of major food processing equipment used for preservation, concentration, and product transformation (e.g., retort, HPP UNIT, extruder).
- Evaluate the impact of various processing technologies on the nutritional, physicochemical, and sensory attributes of different food commodities.
- Apply the principles of smart processing, automation, and modeling to optimize energy efficiency and quality control in modern food production lines.

Learning Outcomes

The students would be able to:

- Critically differentiate between the mechanisms of microbial inactivation achieved by thermal (Pasteurization, Sterilization) and non-thermal (PEF, HPP) technologies.
- Calculate and validate the thermal process determination parameters (F,D, z values) for safe and effective canning/retort operations.
- Select and justify the appropriate processing technology (e.g., Freeze-drying vs. Dehydration vs. HPP) for a given food product to maximize quality retention and shelf-life.
- Design a simple cold chain management plan and explain the role of freezing kinetics in preserving the quality of frozen products.
- Demonstrate knowledge of how AI and Automation are integrated with emerging technologies (Ohmic, Microwave) to create smart and efficient processing environments.

THEORY
(Credits 2; Hours 30)

UNIT I: Thermal Processing Technologies (8 Hours)

This unit focuses on the fundamental principles of heat transfer, microbial death kinetics, and engineering of established preservation, concentration, and product-shaping thermal methods.

- Pasteurization and Sterilization: Batch vs. Continuous systems (HTST, UHT).Effectiveness relative to target microorganisms (e.g., *C. botulinum*).
- Evaporation, Concentration, Dehydration: Single-effect vs. Multiple-effect evaporators. Drying kinetics (constant rate, falling rate periods).Air-drying (tray, fluidized bed), spray drying, drum drying.
- Retort Processing and Canning: Canning process flow sheet. Thermal process determination: D-value (Decimal Reduction Time), z-value (Thermal Resistance Constant), and F-value (Sterilizing Value) calculations.
- Baking and Extrusion Technologies: Principles of baking (heat and mass transfer).Extrusion cooking: Components, mechanics

UNIT II: Non-Thermal Technologies 7 Hours

This unit covers advanced preservation techniques utilizing pressure, electric fields, radiation, and separation methods to achieve microbial inactivation and selective component removal with superior quality retention.

- High-Pressure Processing (HPP): Principles of pressure effects on microbial membranes and enzymes. Equipment, process parameters (pressure, hold time), and applications.
- Pulsed Electric Fields (PEF): Mechanism of electroporation. Electric field strength, pulse width, and treatment time.
- Membrane Technologies (RO, UF, MF, Nano-filtration): Principle of operation (pressure gradient).Membrane pore size, flux, and applications in clarification and concentration.
- Ozone, UV Irradiation, Cold Plasma, Ultrasound: Mechanisms of microbial inactivation for each method, Applications in surface treatment and liquid processing.

UNIT III: Low Temperature Processing Technologies 7 Hours

This unit Explores preservation through temperature reduction, focusing on the physics of chilling and freezing, cold chain management, and the quality implications of ice formation and sublimation.

- Chilling Technology and Cold-Chain Management: Refrigeration cycle basics. Chillers (air blast, hydro-cooling). Importance of Time-Temperature Integrators (TTIs) in the cold chain.

- Freezing Kinetics and Freeze-Drying (Lyophilization): Freezing curves and the zone of maximum ice crystal formation. Impact of freezing rate on ice crystal size and texture. Freeze-Drying: Principle of sublimation, stages (freezing, primary, secondary drying).
- Cryogenic Freezing, IQF, and Thawing: Use of Liquid Nitrogen and CO_2, Individual Quick Freezing (IQF): Fluidized bed technology. Controlled thawing techniques and their effect on drip loss and quality.

UNIT IV: Emerging Processing Technologies
(8 Hours)

This unit describes the latest volumetric and highly controlled energy delivery technologies and their integration with Industry 4.0 concepts to create adaptive, efficient, and quality-driven smart food manufacturing systems.

- Ohmic Heating and Radiofrequency (RF) Heating: Principle of volumetric heating (Joule effect).Factors affecting conductivity and heating uniformity. Applications in particle-containing fluids.
- Microwave and Infrared Heating: Mechanism of heating. Penetration depth, surface heating, and rapid drying applications.
- Smart Processing: Automation, Modelling, and AI Applications: Process Automation and Sensors: In-line monitoring systems. CFD (Computational Fluid Dynamics) and other modeling techniques for process optimization (e.g., heat/mass transfer). Integration of Artificial Intelligence (AI) and Machine Learning for predictive maintenance, quality sorting, and adaptive control.

PRACTICAL
(Credits 2; Hours 60)

List of Experiments

1. Concept of Heat penetration and determination of F, D, z-values using laboratory retort.
2. Microwaving vs. boiling effect on texture and nutrient retention in vegetables.
3. Dehydration of fruits/vegetables using hot-air and infrared drying; rehydration ratio.
4. Freezing efficiency study using air-blast or household deep freezer: determination of freezing time, drip loss upon thawing, and evaluation of textural changes in selected fruits/vegetables.
5. High-pressure processing simulation using available demonstration tools/software.
6. Membrane filtration for juice clarification and performance efficiency evaluation.
7. FTIR/texture/rheological analysis of raw vs. processed samples.
8. Packaging and shelf-life modelling using water activity and microbiological parameters.
9. Industrial visit or virtual processing simulation & report submission

Essential Readings/ Suggested Readings

UNIT I

- Kent, N. L. (1994). *Technology of cereals* (4th ed.). Pergamon Press.
- Matz A Samuel, *Bakery Technology and Engineering*.
- Food Safety and Standards Authority of India. (2022). Food safety and testing manuals. Government of India.

UNIT II

- Chakraverty, A. (2001). *Post-harvest technology of cereals, pulses and oilseeds* (3rd ed.). Oxford & IBH Publishing Co. Pvt. Ltd.
- Manay, S. and Sharaswamy, M. (1987). Food Facts and Priniciples. Wiley Eastern Publisher.

UNIT III

- Wills, R., McGlasson, B., Graham, D., Joyce, D., & Geeson, J. (2007). *Postharvest: An introduction to the physiology and handling of fruit and vegetables* (5th ed.). CABI Publishing.
- Salikhe D K and Kadam SS (1995) *Handbook of fruit science and technology. Production Composition, Storage and processing*. Marcel Decker inc, New York

UNIT IV

- Siddapa, GS (1986) *Preservation of Fruits and Vegetables*, ICAR Publication
- Srivastava, R. P., & Kumar, S. (1998). *Fruit and vegetable preservation: Principles and practices* (3rd ed.). CBS Publishers & Distributors.
- Salikhe D K and Kadam SS (1995) *Handbook of fruit science and technology. Production Composition, Storage and processing*. Marcel Decker inc, New York

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

CLINICAL SPORTS NUTRITION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Clinical Sports Nutrition	4	2	0	2		NIL

Learning Objectives

- To understand the nutritional requirements for athletes with clinical conditions, special conditions and special dietary needs.
- To develop skills for fulfilling dietary considerations for athletes with clinical conditions, special conditions and special dietary needs.

Learning Outcomes

- The competency of providing suitable dietary modifications for various clinical conditions of sports persons.
- Competency of providing guidelines and dietary monitoring of sports persons with various clinical conditions to enable enhanced performance.

THEORY

(Credits 2; Hours 30)

UNIT I: Athletes with Nutrition related disorders 7 Hours

This unit deals with the nutritional intake of athletes with Diabetes Mellitus, Anemias and gastrointestinal disorders.

- **Diabetes Mellitus:** Problems of athletes with Type-1 diabetes and cardiovascular diseases; Medical Nutrition Therapy (MNT) for athletes with Type-1 diabetes and cardiovascular disease; dietary guidelines and nutrient timing; type of carbohydrate and timing; pre and post event carbohydrate loading and fluids; insulin adjustments for athletes with Type-1

diabetes; special problems for athletes with Type-1 diabetes and cardiovascular disease; complications with poorly controlled diabetes.

- **Anaemias in Sports:** Definition and description; causes and consequences; physiological effects of exercise; pathophysiology; Medical Nutrition Therapy.
- **Athletes with gastrointestinal(GI) disorders, food allergies and food intolerance:** GI disturbance occurring in some athletes before, during and after competition and training; excessive flatulence; abdominal distention; intermittent diarrhoea; constipation; Food Related Adverse Reactions (FRAR); physiological and dietary factors affecting gastric emptying and gut comfort; gut trainability; lower GI tract conditions; Irritable Bowel Syndrome(IBS); low Fermentable Oligosaccharides, Disaccharides, Monosaccharides & Polyols (FODMAP) diet for IBS; Composition, food sources of FODMAP and pattern of consumption; Celiac disease (Diagnosis and treatment); Inflammatory Bowel Disease (IBD) diagnosis, Nutrition related concerns for athletes with untreated IBD; Medical Nutrition Therapy.

UNIT II Nutrition for Sports injuries 9 Hours

In this unit students learn about the appropriate nutritional intake of athletes for recovery from injuries and management of paralympic athletes.

- **Sport injury and rehabilitation**: Type of injury and rehabilitation required, physiological and metabolic changes during injury and rehabilitation; eating habits commonly followed during an injury; overweight among injured athletes; role of nutrition and dietary guidelines in recovery from an injury; common injuries among athletes-Maxillofacial fractures, knee injury, Anterior Cruciate Ligament (ACL) tear, Patellofemoral syndrome, Tennis elbow, Ankle sprain, Groin pull, Hamstring sprain.
- **The Paralympic Athlete:** Athletes with physical or intellectual impairments (Classification and associated risk for injury or health outcomes); body composition assessment and management; eating difficulties and behaviours observed in some athletes with impairments.
- **Paralympic athletes and nutritional demands:** Dietary intakes and potential issues; reported dietary intakes; fibre timing of food intake and bowel control; fluid intake; medicine requiring Therapeutic Use Exemption (TUE) under World Anti-Doping Agency (WADA); Use of vitamin, mineral or sports supplement; travelling with paralympic athletes.

UNIT III Nutrition for athletes with special dietary needs 8 Hours

This unit explores nutritional challenges for children, female, and vegetarian athletes, focusing on growth, energy needs, and dietary guidelines for performance.

- **Children and adolescent athletes:** Nutritional issues commonly faced; eating habits and addiction; nutritional requirements for growth and training.
- **Female athletes:** Vulnerability to nutrition assault and insufficiency; differences in fuel or nutrient utilisation among female athletes; female athletic triad (FAT) including eating disorder, menstrual irregularity and poor bone mineral density and RED-S (Relative Energy Deficiency in Sport); energy availability-definition and its association with FAT and RED-S; assessment for RED-S; dietary guidelines and suggestions for RED-S; dietary guidelines and suggestions for pregnant and lactating female athletes.
- **Vegetarian athletes:** Classification; nutritional status and dietary considerations; nutritional gaps currently identified and suitable dietary modification for fuelling during training, competitions and traveling.

UNIT IV: Medical and Nutritional Issues for the Travelling Athlete 6 Hours

This unit addresses the nutritional challenges of traveling athletes, focusing on environmental monitoring, food safety, hydration, illness prevention, and adherence to dietary guidelines for optimal performance.

- Nutritional problems often faced by the travelling athletes; monitoring and documentation of climate, time zones, altitude, food safety and availability by the support staff or nutritionist;
- Market surveys and research support for the journey (travel, accommodation, catering, training and event schedules); noting vaccination and existing allergies; hydration and supplements for travel within country and overseas;
- Strategies for meeting dietary guidelines while traveling and follow up.

PRACTICAL

(Credits 2; Hours 60)

1. Planning a diet and important points for counselling for an athlete with:
    - Diabetes Mellitus;
    - Anaemia;

- Food-Related Adverse Reactions;
- Sports injury.

2. Planning a diet and enlisting other important aspects of dietary management of a Paralympic athlete.
3. Planning a diet for vegetarian athletes; enlisting aspects of follow up.
4. Preparing a handout for dietary support during traveling, including fluid intake strategies and.
5. Assessing athletes at risk of eating disorders using EAT -26

Essential Readings

UNIT I

- Burke, Louise, and Vicki Deakin. (2015). *Clinical sports nutrition*. McGraw-Hill.
- Jeukendrup, A., & Gleeson, M. (2019). Sport nutrition (3rd ed.). Human Kinetics.
- Jeukendrup, A. (2017). *Training the gut for athletes*. Sports Science Exchange, 28(165), 1–6.
- Bhatia, T. K., Bhatia, J., & Aryadeep. (2022). *An entity called sports anemia: Does it really exist or is a misnomer: A systematic review of existing literature*. *GMC Patiala Journal of Research and Medical Education*, 5(01), 25–33. https://www.jrme.gmcpatiala.edu.in/index.php/j/article/view/94
- Manna, I. (2020). *Study of iron status of Indian female athletes*. *Journal of Cardiovascular Disease Research*, 11(4). https://jcdronline.org/index.php/JCDR/article/view/1204 Retrieved from https://www.gssiweb.org/en/sports-science-exchange/article/training-the-gut-for-athletes
- Cannata, F., Vadalà, G., Ambrosio, L., Papalia, R., & Napoli, N. (2020). *Nutritional therapy for athletes with diabetes*. *Journal of Functional Morphology and Kinesiology*, 5(4), 83. https://doi.org/10.3390/jfmk5040083 PMC

UNIT II

- Burke, Louise, and Vicki Deakin. (2015). *Clinical sports nutrition*. McGraw-Hill.
- Broad, E. (Ed.). (2014). Sports Nutrition for Paralympic Athletes. CRC Press.
- Chowdhery, A., Agarwal, A., & Saini, A. (2025). *Prevalence of sports injuries among athletes in the Lucknow region: A cross-sectional study*. *Cureus*, 17(8), e90266. https://pubmed.ncbi.nlm.nih.gov/40964569/

UNIT III

- Burke, Louise, and Vicki Deakin. (2015). *Clinical sports nutrition*. McGraw-Hill : Chapter 18, Nutritional issues for young athletes: children and adolescents.

- Burke, Louise, and Vicki Deakin. (2015). *Clinical sports nutrition*. McGraw-Hill : Chapter 24, Special Populations: Section: Travelling Athletes

UNIT IV

- Burke, Louise, and Vicki Deakin. (2015). *Clinical sports nutrition*. McGraw-Hill : Chapter 24, Special Populations: Section: Travelling Athletes

Suggested Reading

- Campbell, B. (Ed.). (2013). Sports nutrition: enhancing athletic performance. CRC Press.
- Larson-Meyer, D. E. (2007). Vegetarian sports nutrition. Human Kinetics.
- Marie Dunford. (2017) Nutrition for Sport and Exercise.
- Jeukendrup, Asker. (2017). Training the Gut for Athletes. Sports Medicine. 47. 10.1007/s40279-017-0690-6.

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

DISCIPLINE SPECIFIC ELECTIVE

DOPING, SUPPLEMENTS AND ERGOGENIC AIDS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Doping, Supplements and Ergogenic Aids	**4**	**3**	**0**	**1**		**NIL**

Learning Objectives

- To gain understanding of the various supplements used for performance enhancement in sports
- To build knowledge on the drugs used in sports and the nodal bodies for controlling doping.

Learning Outcomes

- Student will gain competence towards guiding the athlete on supplements and ergogenic aids for sports performance.
- Students will be able to understand doping control practices and assist athletes towards preventing use of banned drugs.

THEORY
(Credits 3; Hours 45)

UNIT I: Doping in Sports 12 Hours

This unit develops a basic understanding of drugs used for performance enhancement and the basic Acts for protection

- Doping in sports: Definition of Doping
- Categories of banned drugs in sports
- Anti-doping framework

- Role of WADA and NADA

UNIT II: Ergogenic Aids and Macronutrient Supplements 10 Hours

This unit deals with Usage of macro-nutrients as supplements for performance enhancement in Sports.

- Dietary supplements: Definition and classifications
- Ergogenic aids: Definitions and classifications;
- Dietary Supplement Health and Education Act of 1994; Government protections from dietary supplement hazards and risks;
- Carbohydrate Supplements: Carbo-loading, Sports Drinks, Bars and Gels.
- Fat Supplements: Omega Fatty acids, Medium Chain Triglycerides, Fish Oils.
- Protein Supplements: Proteins, amino acid mixtures and specific amino acids

UNIT III: Micronutrient Supplements for performance enhancement 11 Hours

In this unit students will gain knowledge on the usage of Micro-nutrients as supplements for performance enhancement in Sports.

- Vitamin Supplements: B-Complex Vitamins, Vitamin C, Vitamin D, Vitamin E Supplements, Multi-Vitamin Supplements.
- Mineral Supplements: Calcium-Magnesium, Iron Supplements, Chromium, Zinc.
- Antioxidants Supplements: Endogenous and exogenous antioxidant supplements.

UNIT IV: Metabolite and Botanical Ergogenic Supplements 12 Hours

In this unit students learn about various botanical supplements used for performance enhancement and the common metabolites in use by athletes to gain performance.

- Botanical Ergogenic Supplements: Wheat Germ oil, Beetroot, Green Tea Extract, Tart Cherries, Caffeine, Curcumin, Phytosterols, Bio Flavonoids, Ashwagandha, Trifla, Rhodiola, Shilajit, Ginseng, Grape Seed Extract, Resveratrol, Chyawanprash, Herbal Testosterone-Boosters (Eg. Tribulus Terristris, Nettle Root, Long Jack Root Etc), Bitter Orange (Citrus aurantium), Capsaicin, White Kidney Bean (Phaseolus vulgaris), Garcinia Cambogia (Hydroxycitric Acid), Guar Gum, and Psyllium, Glucomannan.
- Metabolite Ergogenic Supplements: Beta-Alanine, L-Carnitine Co Enzyme Q 10, Creatinine, DHEA, NADH, Glycerol, Inosine, Melatonine, Gamma Oryzanol (Ferurates),
- Glucosania, Alcohol, Adoptogens, Alkalinizers, Androstenedione, HMB.

PRACTICAL
(Credit 1; Hours 30)

1. Survey of supplements available in India for performance enhancement in sports
2. Development and standardisation of a sports bar or meal replacement bars
3. Composition and brand names of supplements that improve Muscle mass commonly available in the market and role of nutrients listed in athletic performance.
4. Composition and brand names of Carbohydrate supplements; Protein supplements; Fat supplements; Micronutrient-supplements; metabolite supplements; and botanical supplements commonly available in the market
5. Planning a diet for strength athletes with supplements for muscle building
6. Planning a diet for endurance athletes with supplements for energy and micronutrients
7. Providing diet for clinical conditions with supplement usage (Planning the type, quantity and timing of supplement intake)

Essential Readings

UNIT I

- Sharma, S. K., et al. (2024). *Examining doping violations among Indian women in sports*. *ShodhKosh: Journal of Visual and Performing Arts*, 5(1). Retrieved from https://www.granthaalayahpublication.org/Arts-Journal/ShodhKosh/article/view/5114 Granthaalayah Publication
- *A critical analysis of the impact of doping in sports domain*. (2021). *International Journal of Law Management & Humanities*. Retrieved from https://ijlmh.com/paper/a-critical-analysis-of-the-impact-of-doping-in-sports-domain/
- World Anti-Doping Agency. (2025). *The Prohibited List*. https://www.wada-ama.org/en/resources/world-anti-doping-code-and-international-standards/prohibited-list
- Pal, Atul. (2025). A review of doping in sports: India and the world. Sports law, policy & diplomacy journal. 3. 71-88. 10.30925/slpdj.3.1.5.
- WADA official website https://www.wada-ama.org/en

UNIT II

- TrueSport. (n.d.). *Nutrition Guide: Fueling for performance* [PDF]. TrueSport / U.S. Anti-Doping Agency (USADA). https://learn.truesport.org/wp-content/uploads/Nutrition-Guide.pdf
- Antonio, J., Kalman, D., Stout, J. R., Greenwood, M., Willoughby, D. S., & Haff, G. G. (2008). *Essentials of sports nutrition and supplements*. Humana Press

UNIT III:

- Maughan, R. J. (Ed.). (2008). Nutrition in sport (Vol. 7). John Wiley & Sons.
- Vedula G.S., Dietary Supplements and Nutraceuticals (pdf from ResearchGate) 2025. Publisher: Notion Press; ISBN: 9798897247493

UNIT IV

- Castell, L. M., Stear, S. J., & Burke, L. M. (Eds.). (2015). *Nutritional supplements in sport, exercise and health: An A-Z guide* [PDF]. Retrieved from https://vdoc.pub/documents/nutritional-supplements-in-sport-exercise-and-health-an-a-z-guide-5np38amoqp70
- Maughan, R. J., et al. (2018). *Herbal medicine for sports: A review*. *Journal of the International Society of Sports Nutrition, 15*, Article 14. https://jissn.biomedcentral.com/articles/10.1186/s12970-018-0218-y
- Slater, G., & Jenkins, D. (2006). *Dietary supplements and sports performance: Metabolites, constituents, and extracts*. *Journal of the International Society of Sports Nutrition, 3*, Article 2. https://jissn.biomedcentral.com/articles/10.1186/1550-2783-3-2-1

Suggested Readings

- Ryan, M. (2012). Sports nutrition for endurance athletes. Velo Press.
- Raven, P., Wasserman, D., Squires, W., & Murray, T. (2012). Exercise Physiology: An Integrated approach. Nelson Education.
- Ehrman, J. K., Kerrigan, D., & Keteyian, S. (2017). Advanced Exercise Physiology: Essential Concepts and Applications. Human Kinetics.
- McArdle, W. D., Katch, F. I., & Katch, V. L. (2015). Exercise physiology: nutrition, energy, and human performance. 8th Edition, Lippincott Williams & Wilkins.

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

SKILL BASED COURSE
NUTRITION SCREENING AND ASSESSMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
SBC FN-01 Nutrition Screening and Assessment	**2**	**0**	**0**	**2**		**NIL**

Learning Objectives

- To gain an insight into the importance/relevance of nutrition screening and assessment in the community and hospital settings.
- To study quality control and standardization techniques in nutritional screening and assessment.
- To get an exposure to various nutritional screening and assessment methods .
- To develop or adapt/modify existing nutrition screening tools/programs for diverse cultural and socioeconomic settings.
- To understand the role of emerging methods/technologies in nutrition assessment.
- To interpret results from nutritional screening and assessment tools and communicate the findings.

Learning Outcomes

The students would be able to:

- Assess nutritional status based on clinical signs and symptoms, anthropometric measurements and dietary intake at the individual and community level.
- Maintain accuracy and consistency in nutrition screening and assessment methods through quality control measures.
- Use of specialized nutrition screening and assessment tools in community and hospital settings.
- Analyse, document and present nutrition assessment data.

PRACTICAL
(Credits 2; Hours 60)

1. **Relevance, significance and methods of Nutrition Screening and Assessment**
    - Importance of nutrition screening and assessment.
    - Relevance and application of different nutrition screening tools.
    - Methods of nutritional assessment in the community and hospital settings.
2. **Standardization, Quality Control & Assurance in Nutrition Screening and Assessment**
    - Standardization, calibration and validation of assessment tools.
    - Inter-observer and intra-observer variability in measurements.
    - Guidelines for maintaining accuracy and consistency in screening/assessment methods
    - Methods to minimize errors in nutrition screening and assessment
3. **Ecological variables in nutritional assessment**
    -
4. **Clinical examination for nutritional assessment.**
    - Identification of key clinical signs and symptoms of nutritional disorders.
5. **Anthropometric measurements for nutritional assessment.**
    - Measurement of Weight, Height/Length, Mid Upper Arm Circumference and Waist Circumference.
    - Interpretation of anthropometric data using various Indices and indicators in different age groups.
6. **Dietary assessment**
    - Assessment of dietary intake pattern, dietary diversity and estimation of food and nutrient intake - Food Frequency Questionnaire and 24-Hours Diet Recall
    - Use of mobile applications and digital tools for dietary assessment.
7. **Assessment of body composition**
    - Estimation of fat mass and lean body mass using Bioelectric Impedance method.
8. **Screening for risk of development of Non-Communicable Diseases**
    - Screening for risk of developing non-communicable diseases (Diabetes, Hypertension, Cardiovascular Diseases).
9. **Interpretation, documentation and presentation of data on nutritional status assessment.**
    - Nutrition data presentation, interpretation and report writing.

Essential Readings

- Gibson, R. S. (2005). *Principles of Nutritional Assessment.* Oxford University Press.
- Lee, R. D., & Nieman, D. C. (2018). *Nutritional Assessment.* McGraw-Hill Education.
- ahan, L. K., & Raymond, J. L. (2020). *Krause's Food & the Nutrition Care Process.*
  Elsevier.
- WHO & FAO Reports on Nutrition Assessment and Screening Guidelines.

Suggested Readings

- Gropper, S. S., Smith, J. L., & Carr, T. P. (2019). *Advanced Nutrition and Human Metabolism.* Cengage Learning.
- Willett, W. C. (2013). *Nutritional Epidemiology.* Oxford University Press.
- Recent research articles and journals on AI and digital tools in nutrition assessment.
- Reports on cultural and socioeconomic adaptations in nutrition screening.

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

SKILL BASED COURSE

FOOD BUSINESS MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Food Business Management	**2**	**0**	**0**	**2**		**Nil**

Learning Objectives

- To equip students with hands-on skills for establishing and managing a food business.
- To provide practical exposure to idea generation, costing, and marketing strategies.
- To develop entrepreneurial skills amongst students
- To develop practical, skill-based knowledge required to manage food businesses effectively.

Learning Outcomes

The student would be able to:

- Develop a food business idea from concept to execution.
- Design appropriate packaging, labelling, and branding for food products.
- Calculate cost, pricing, and profitability of food products.
- Implement marketing and sales strategies for a successful food business.
- FSSAI rules and regulations and licensing

PRACTICAL
(Credits 2; Hours 60)

1. **Market Research and Analysis of Consumer Behaviour**
    - Conducting a consumer survey and preparing a report on the food business observed, with an analysis of strengths, weaknesses, opportUNITies, and threats (SWOT)/ market trends.
2. **Concept Development and Business Planning**
    - Brainstorming food business ideas based on available resources and idea generation
3. **Product or Process Planning, Costing and Pricing**

- Creating a balanced and cost effective menu for a new restaurant or café. The menu should reflect nutritional balance, target customer preferences, and seasonal variations.
- Estimating raw material costs with simple cost sheets and determining product pricing
- Developing an SOP for a commercially viable food product considering market trends, nutrition, and consumer preferences

4. **Human Resource Management**
5. Training the employees working in a college canteen on principles of GMPs
6. **Cost effective Branding and Promotion**
    - Designing a marketing plan for a food product or service (e.g., a new menu item, food delivery service, or health food product).
7. **Basic Packaging and Labelling**
    - Applying FSSAI-compliant packaging and labelling regulations for a given product.
8. **Food Safety and Quality Assurance**
    - Performing a mock food safety audit in a local food establishment. Planning for effective implementation of HACCP (Hazard Analysis Critical Control Point) system or relevant certifications.
9. **Sales Strategies and Customer Engagement**
    - Practicing effective sales of a product and handling customer inquiries and feedback (Grievance redressal mechanism – GoI)
10. **Exploring Funding and Government Schemes**
    - Identifying government support programs, CSR and other funding options for food start-ups.

11. Development of a business plan

- Creating a business plan for a new food-related business; identifying resources, developing project plan, determining investments, creating a financial budget, marketing strategies, understanding regulations to set up businesses.Understanding FSSAI rules and regulations and licensing for food products.

Essential Readings

- Garry, A. and Ken, A. (Eds.) (2007) *The Business of Food*, Sixth edition, India: Bloomsbury publishing.
- Chimhundu, R. (2018) *Marketing Food Brands*, Springer Nature-Palgrave MacmillanWest Yorkshire: Society of Dyers and Colorists, England.
- FSSAI (2025). *Basic Food Safety Handbook/ Manual for Food Manufacturers, Processors and Packers*, Government of India. https://fostac.fssai.gov.in/doc/Basic%20Manufacturing%20English.pdf (accessed 24.2.2025

- Wazir, R. (2024). *Beyond the Menu: A Restaurant Start-up Guide*, India: Jaico Publishing House.
- FSSAI Regulations. https://www.fssai.gov.in/cms/food-safety-and-standards-regulations.php (accessed 24.2.2025).

Suggested Readings

- Jones, G. and Morgan, NJ. (1994) *Adding Value: Brands and Marketing in Food Business*, Boston, Harvard Business School.
- Philip E T. (2008) *Modern Cookery for teaching and Trade Part I & II*, Orient Longmam
- Desai, V. (2011) *The Dynamics of Entrepreneurial Development and Management*. Mumbai: Himalaya *Publishing House Pvt. Ltd.*
- Kottler, P. (1994) *Marketing* Management. New Delhi: Prentice Hall of India Private Limited
- Sethi, M. (2005) *Institution Food Management.* India: New Age International Publishers
- Suri S and Malhotra A (2014). Food Science, Nutrition and Food Safety. Delhi: Pearson India Ltd., New Delhi.
- Mathur P. (2018). Food Safety and Quality Control. Orient Blackswan Pvt. Ltd., Hyderabad.

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

SKILL BASED COURSE

INTERNSHIP-1

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Internship -1	2	0	0	2		Nil

Learning Objectives

- To gain hands on experience of working in various institutions related to the area of Food and Nutrition.

Learning Outcomes

The student would be able to gain hands on experience of working in various institutions related to the area of Food and Nutrition.

PRACTICAL
(Credits 2; Hours 60)

The students could work with NGOs / Government agencies / International agencies/ Hospitals / Food Industries etc. They would be required to present a report of their Internship in their Department.

SKILL-BASED COURSE

NUTRITION AND HEALTH DATA VISUALIZATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Nutrition and Health Data Visualization	**2**	**0**	**0**	**2**		NIL

Learning Objectives

- To understand the significance and core principles of effective data visualization in the context of nutrition and health.
- To learn how to extract, prepare, and transform data for effective visualization.
- To build proficiency in creating impactful visualizations, ranging from basic charts to advanced interactive visuals, using tools like Excel, Google Sheets, and specialized data visualization software.
- To apply data visualization techniques to nutrition-related data and create meaningful visuals and dashboards.

Learning Outcomes

The students would be able to:

- Demonstrate an understanding of the significance and core principles of data visualization, specifically within the context of nutrition and health.
- Develop the ability to extract, prepare, and transform raw data into a format suitable for visualization, ensuring accuracy and clarity.
- Gain proficiency in using tools like Excel, Google Sheets, and specialized software to create a variety of visualizations, from basic charts to advanced interactive visuals.
- Apply data visualization techniques effectively to nutrition-related datasets,

creating compelling visuals and dashboards that communicate key insights and trends.

PRACTICAL
(Credits: 2; Hours: 60)

1. **Introduction to Data Visualization and Exploring Nutrition and Health Data**
    a. Critical evaluation of the key principles of data visualization using the existing visualizations
    b. Exploring nutrition-related datasets for understanding different types of data, measurement scales and indicators (NFHS data, NSSO data etc)

2. **Data Preparation and Summarization**
    a. Entering and cleaning of data: Data entry, cleaning and formatting; sorting and filtering data
    b. Transforming data using conditional formatting for removing duplicates, identifying outliers, finding the missing value, data imputation

3. **Data visualization of univariate and bivariate data using excel, Google Sheets, and data visualization software like Tableau/ QGIS/ Power BI etc.**
    a. Creating basic charts such as bar charts, pie charts, line charts, histograms, and box plots.
    b. Creating scatter plots, line graphs and bubble charts.
    c. Understanding when and why to use each specific chart type
    d. Visualizing and interpreting correlation and causality
4. **Creating Interactive Dashboards**
    - Critical evaluation of a nutrition dashboard
    - Developing of nutrition dashboard
    - Case study: reviewing real-world application of data visualization in nutrition and health

Essential Readings

- Cairo, A. (2019). *How Charts Lie: Getting Smarter about Visual Information*. W.W. Norton & Company.
- Tufte, E.R. (2001). *The Visual Display of Quantitative Information*. Graphics Press.
- Wilke, C.O. (2019). *Fundamentals of Data Visualization: A Primer on Making Informative and Compelling Figures*. O'Reilly Media.
- Few, S. (2012). *Show Me the Numbers: Designing Tables and Graphs to Enlighten*. Analytics Press.
- Manorat, R., Becker, L., & Flory, A. (2019). *Global data visualization tools to empower decision-making in nutrition*. Sight and Life, 33(1), 108-114.
- Stephen R. Midway. (2020) *Principles of Effective Data Visualization, Patterns*. Volume 1, Issue 9, ISSN 2666-3899, https://doi.org/10.1016/j.patter.2020.100141.

- National Family Health Surveys, URL- https://www.nfhsiips.in/nfhsuser/index.php

Suggested Readings

- Healy, K. (2018). *Data Visualization: A Practical Introduction*. Princeton University Press.
- Murray, D. (2016). *Tableau Your Data: Fast and Easy Visual Analysis with Tableau Software*. Wiley.
- Wickham, H. (2016). *ggplot2: Elegant Graphics for Data Analysis*. Springer.
- Jones, B. (2023). *Python Data Visualization Cookbook*. Packt Publishing.
- Monmonier, M. (1996). *How to Lie with Maps.* University of Chicago Press.

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

SKILL BASED COURSE
SCIENTIFIC WRITING SKILLS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Scientific Writing Skills	2	0	0	2		Nil

Learning Objectives

- Introduce students to diverse forms of scientific writing, including research articles, theses, and reviews.
- Equip students with skills to write publishable scientific research articles.
- Train students in managing references using tools like Mendeley, Zotero etc.
- Develop skills for effective communication of scientific findings.

Learning Outcomes

The students would be able to:

- Write clear and structured scientific documents adhering to standard formats and ethical guidelines.
- Effectively use reference management and data visualization tools for scientific writing.
- Communicate scientific information to both academic and general audiences through various formats.
- Critically evaluate and improve scientific manuscripts using proofreading and peer-review techniques.

PRACTICAL
(Credits 2; Hours 60)

1. **Introduction to Scientific Writing:** **1 week**

   Forms of scientific writing: Theses, technical papers, reviews, manuals; Key elements of scientific articles; Basics of technical writing

Assignment : Select a published scientific article and condense it into a concise abstract (1/10th of the original length)

2. **Language and Structure in Scientific Writing: 1 week**

   Importance of clarity, choosing the right words, sentence structure, tenses, active vs. passive voice; Paragraph structuring, punctuation, and logic flow; Précis writing **Assignment :** Rewrite a complex scientific paragraph to make it clearer and more concise without losing essential details.

3. **Using Tools and Resources for Scientific Writing: 2 weeks**

   Web-based search engines, using authentic sources; Reference management tools (e.g., Mendeley, Zotero)
   Assignment : Create a detailed review of an instrument, technique, or technology used in Food and Nutrition research.

4. **Visual Communication in Science: 2 weeks**

   Creating tables, graphs, and figures; Using MS Office, Excel for data, and creating graphs/tables; Developing explanatory artwork and PowerPoint presentations; Designing scientific posters.
   Assignment : Create tables and graphs using a given set of data

   Assignment : Design a scientific poster on a current issue in food science and nutrition using assignment 4

5. **Writing for General Audience 2 weeks**

   - Science writing for the general public.
   - Differences between technical writing and science communication.
   - Writing science news and popular articles

   Assignment : Convert the review (Assignment 3) into an article targeted at a general audience.

6. **Academic Writing – Structure and Ethics 2 weeks**

   - Components of scientific papers: Title, abstract, introduction, methods, results, discussion, conclusion
   - Ethics in writing, plagiarism, and using plagiarism checkers
   - Selecting journals, understanding impact factors, and submission processes

Assignment : Write a short communication based on a recent lab experiment or field study.

7. **Reviewing and Proofreading** **1 week**

- Peer-review process and proofreading techniques
- Using proofreading symbols and online review tools
- Addressing reviewers' comments

Assignment : Peer review a classmate's short communication using proofing symbols and suggest improvements.

8. **Advanced Scientific Writing** **1 week**

- Writing systematic review papers and meta-analyses.
- Understanding citation styles (APA, Vancouver) and managing bibliographies
- Software for referencing

Assignment : Rewrite the bibliography of the review paper done in Assignment 3 in APA, and Vancouver styles.

9. **Presenting Research** **3 weeks**

- Preparing and presenting research at conferences.
- Designing posters and oral presentations.

Assignment: Prepare a PowerPoint presentation on a food or nutrition-related topic

Assignment : Deliver the prepared PowerPoint presentation

Essential Readings

1. Mohapatra, P.K.J and Moulick, S. (2025). Principles of Scientific and Technical Writing. McGraw Hill
2. Hofmann, A.H. (2016). Scientific Writing and Communication. Oxford Univ Pr; 3rd edition
3. Day, R.A ; Gastel, B. (2006). How to Write and Publish a Scientific Paper. Greenwood Publishers
4. Kalpana, S. and Kanimozh, K. (2024). Scientific Writing Handbook. CBS Publishers and Distributors Pvt. Ltd.

Note: Examination scheme and mode shall be as per the Examination branch, University of Delhi.

SKILL BASED COURSE

INTELLECTUAL PROPERTY RIGHTS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Intellectual Property Rights	2	1	0	1		Nil

Learning Objectives

- To provide an understanding of Intellectual Property Rights (IPR) and their relevance in food and nutrition.
- To familiarize students with various types of IPR, including patents, trademarks, geographical indications, and copyrights.
- To understand the role of IPR in food innovation, research, and public health.
- To equip students with knowledge of national and international frameworks governing IPR in the food sector.
- To develop practical skills in patent searching, trademark registration, and case studies on IPR application.

Learning Outcomes

The students would be able to:

- Understand the significance and scope of IPR in food and nutrition.
- Describe different forms of IPR and their application in the food industry.
- Explain legal frameworks, policies, and ethical considerations related to IPR.
- Gain practical knowledge of patent filing, licensing, and commercialization of food products.

THEORY

(Credits 1; Hours 15)

UNIT I: Fundamentals of Intellectual Property Rights **7 Hours**

- Definition, history, and importance of IPR in food and nutrition.
- Types of intellectual property: patents, trademarks, copyrights, geographical

indications, and trade secrets.
- International agreements related to IPR (WTO, TRIPS, WIPO, etc.).
- Legal and regulatory frameworks for IPR in India.
- Patentability criteria for food and nutrition-related innovations.
- Trademark registration and protection for food products and brands.

UNIT II: Application and Ethical Considerations of IPR in Food Industry 8 Hours

- Importance of geographical indications (GI) for traditional and indigenous food products.
- GI registration process in India and case studies.
- Role of copyrights in food product labeling, marketing, and recipe documentation.
- Ethical issues and consumer protection related to IPR in food.
- IPR's role in food safety regulations (FSSAI, Codex Alimentarius, etc.).
- Protection of functional foods, nutraceuticals, and novel food products under IPR.

PRACTICAL
(Credits 1; Hours 30)

1. **Patent Search and Analysis**
    - Conducting a patent search on a food-related product.
    - Analyzing existing patents and their applications in the food sector.
2. **Trademark Registration Process**
    - Understanding trademark application and filing procedures.
    - Case study on a well-known food brand's trademark protection.
3. **Geographical Indication Case Study**
    - Researching and preparing a report on a registered GI product in India.
4. **Copyright and Ethical Considerations**
    - Preparing a food label with copyright compliance.
    - Ethical considerations in recipe documentation and marketing.
5. **IPR in Food Commercialization**
    - Understanding licensing and technology transfer.
    - Group discussion on the future trends of IPR in food and nutrition.
6. **Case Study on Patent Filing**
    - Drafting a mock patent application for a food innovation.
7. **Technology Transfer & Licensing Simulation**
    - Understanding the steps in commercializing food innovations through licensing agreements.
8. **Consumer Protection and IPR**
    - Identifying misleading claims and IPR violations in food advertisements.
    - Exploring legal measures for consumer rights in the food industry.

Essential Readings

- Ganguli, P. (2001). *Intellectual Property Rights: Unleashing the Knowledge Economy*. Tata McGraw-Hill.
- Dutfield, G., & Suthersanen, U. (2008). *Global Intellectual Property Law*. Edward Elgar Publishing.
- Das, K. (2009). *Protection of Geographical Indications: An Overview of Select Issues with Special Reference to India*. Centre for Trade and Development.
- Watal, J. (2001). *Intellectual Property Rights in the WTO and Developing Countries*. Oxford University Press.
- Subbaram, N. R. (2002). *Patent Law: Practices and Procedures*. S. Chand & Company.

Suggested Readings

- Correa, C. M. (2007). *Trade Related Aspects of Intellectual Property Rights: A Commentary on the TRIPS Agreement*. Oxford University Press.
- Chandra, R. (2010). *Intellectual Property Rights: Law and Practice*. Cengage Learning.
- FSSAI Guidelines and Codex Alimentarius on Food Safety and IPR Regulations.

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

SKILL BASED COURSE

Bioinformatics in Food and Nutrition

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Bioinformatics in Food and Nutrition	**2**	**0**	**0**	**2**		**Nil**

Learning Objectives

The aim of the course:

- This course intends to give students practical experience with common bioinformatics tools and databases, with a focus on their immediate application in Food and Nutrition.
- Students will be trained in the basic theory and applications of programs and bioinformatics tools used for database searching, protein and DNA sequence analysis, and prediction of protein structures.
- The students will be able to apply their knowledge to do in-silico analysis in the field of Food and Nutrition.

Learning Outcomes

The students will be able to:

- Learn the basics of bioinformatics and computational biology and develop awareness of the interdisciplinary nature of this field.
- Analyse protein structure (food proteins) using visualization software.
- Perform and interpret protein/DNA sequence alignments.
- Conceptualise fundamental aspects of *in-silico* molecular structure prediction.
- Gain the ability to use bioinformatics to gain a deeper understanding of how certain nutrients affect cellular function at molecular level.
- Implement the bioinformatics skills in different aspects of food and nutrition.

PRACTICAL
(Credits 2; Hours 60)

1. To retrieve sequence (protein and gene related to human nutrition) from NCBI and Molecular file formats – FASTA, Genbank.
2. To perform pairwise sequence alignment using BLAST.
3. To find a gene/ORF from the given DNA sequence (promoter region identification, repeat in genome, ORF prediction) using Genscan or other software.
4. To translate the given DNA sequence using bioinformatic tools and predict its protein structure.
5. To retrieve structure (protein and DNA) from PDB and Molecular visualization by software (Pymol/Yasara view).
6. To predict food protein as allergen by using bioinformatics.
7. To perform homology modelling for prediction of food proteins structure.
8. To perform of molecular docking of protein-ligand (nutrient) using software.
9. To design an innovative project using bioinformatic tools in the area of food and nutrition.
10. Visit to Bioinformatics Lab Facility.

Essential Readings:

- Rastogi, S. C., Mendiratta, N., & Rastogi, P. (2022). *Bioinformatics: methods and applications:(Genomics, proteomics and drug discovery)*. 5th Ed. PHI Learning Pvt. Ltd; ISBN: 9789354438219
- Mukhopadhyay C.S., Choudhary, R.K. and Iquebal M.A. (2017) *Basic Applied Bioinformatics* John Wiley & Sons; ISBN: 978-1-119-24433-2.
- Ghosh, Z. and Mallick, B., (2008) *Bioinformatics – Principles and Applications*; 1st Ed. Oxford University Press (India), ISBN: 9780195692303.
- Gromiha, M.M. (2010). *Protein Bioinformatics: From Sequence to Function*; 1st Ed. Academic Press; ISBN: 9780123884244 Paperback ISBN: 9788131222973

Suggested Readings:

- Harisha, S. (2007). *Fundamentals of Bioinformatics*. IK International Pvt Ltd. ISBN: 9788189866419.
- Mount, D. W., & Mount, D. W. (2001). *Bioinformatics: sequence and genome analysis* (Vol. 564). Cold Spring Harbor, NY: Cold spring harbor laboratory press. ISBN: 0879696877.

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

SKILL BASED COURSE

INTERNSHIP-2

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Internship -2	2	0	0	2		Nil

Learning Objectives

- To gain hands on experience of working in various institutions related to the area of Food and Nutrition.

Learning Outcomes

The student would be able to gain hands on experience of working in various institutions related to the area of Food and Nutrition.

PRACTICAL
(Credits 2; Hours 60)

The students could work with NGOs / Government agencies / International agencies/ Hospitals / Food Industries etc. They would be required to present a report of their Internship in their Department.

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

Annexure-15

UNIVERSITY OF DELHI

University of Delhi

Faculty of Science

Department of Home Science

1-Year M.Sc. Food and Nutrition Coursework + Research Track

Course Credit Structure and Curriculum- NEP 2025

1-Year M.Sc (FOOD AND NUTRITION)

Introduction:

The Department of Home Science offers a 1- year M.Sc. Food and Nutrition, to the 4 -year graduates of B.Sc Home Science, Food and Nutrition specialisation, of University of Delhi. The programme covers key advanced aspects in three areas of specialization namely, Clinical Nutrition, Public Health Nutrition and Food Science and Processing. The programme endeavours to train a cadre of professionals who can create nutrition awareness for promotion of healthy lifestyle among the population. The courses of this programme have been designed to enhance the core competency of students in the fields of public health nutrition, dietetics and food science. The curriculum provides a strong theoretical base and includes experiential learning through field placements and practical.

In addition to strengthening the advanced knowledge base, the programme aims to strengthen the research acumen of students who have developed a strong base in Food, Nutrition and Dietetics, to enable them to develop into academicians and researchers in the field of food science, nutrition and dietetics.

Programme Specific Objectives:

The objectives of M.Sc. Food and Nutrition programme are:

- To apply the understanding of the concepts of biochemistry, food chemistry, food microbiology, methods of assessing human nutritional requirements, nutritional assessment and diet planning in laboratory setting as per standard methods in the above-mentioned areas
- To understand the applications of nutritional sciences in clinical interventions communication for health promotion, food service management, food science and processing
- To improve understanding and develop skills to participate in planning, management and monitoring of public health nutrition programmes implemented by the government.
- To acquire skills to undertake systematic research in the area of food science, clinical nutrition and public health nutrition

Programme Specific Outcomes:

After completing this programme the student will be able to:

- Assess nutritional status and plan appropriate diets.
- Use the knowledge of nutritional sciences in clinical interventions and communication for health promotion
- Work as food scientists, quality assurance managers and analysts.
- Manage a food service establishment
- Apply theoretical concepts and practical training for research in the field of food science, clinical nutrition and public health nutrition

Program Structure 2: M.Sc. Coursework + Research Track

Semester	Core Courses		Elective Courses		Research/Project		Total Credits
	No. of Courses	Total Credits	No. of Courses	Total Credits	No. of Courses	Total Credits	
I	2	8	2	8	1	6	22
II	2	8	2	8	1	6	22
Total Credits for the Course	**16**		**16**		**12**		**44**

List of Courses to be offered to students opting for Structure-2 (Coursework + Research) of M.Sc. in 1st and 2nd Semester of One- year course

Type of Course	Course No.	Semester	Course Title	Credits for each Course			
				Theory	Tutorial	Practical	Total
SEMESTER I							
Discipline Specific Core Course	DSC 1	I	Analytical Techniques and Instrumentation	2	0	2	4
Discipline Specific Core Course	DSC 2	I	Nutritional Epidemiology	3	0	1	4
Discipline Specific Elective Course	DSE 1	I	Statistics and Data Management (From the common Home Science pool)	As per the specific course			4
Discipline Specific Elective Course	DSE 2	I	Medical Nutrition Therapy Institutional Food Service management Social and Cultural Aspects in Public Health Improving Maternal, Infant, Young Child and Adolescent Nutrition Animal Products Processing and Unit Operations in Food Processing Exercise, Nutrition and Metabolism Sport-Specific Nutrition	As per the specific course			4
General Elective Course (*Can be opted for in place 1 DSE course)	GE 1	I	Parenting in Contemporary India Resources and Sustainability Organisational Communication: Tools and Techniques Lifestyle Modifications for Optimal Health Community Nutrition Assessment Dyeing and Printing with Natural Dyes Appreciation of Indian Textiles	As per the specific course			4
Dissertation Project/ Entrepreneurship	DP 1	I	Dissertation/Academic project/ Entrepreneurship	0	0	6	6

SEMESTER II							
Discipline Specific Core Course	DSC 3	II	Food Product Development and Quality Evaluation	2	0	2	4
Discipline Specific Core Course	DSC 4	II	Nutrition Communication and Health Promotion	3	0	1	4
Discipline Specific Elective Course	DSE 3	II	Precision Nutrition Challenges in Clinical Nutrition	As per the specific course			4
Discipline Specific Elective Course	DSE 4	II	Nutritional Care of the Elderly Programme Planning in Public Plant Products Processing and Preservation Food Processing Technologies Clinical Sports Nutrition Doping, Supplements and Ergogenic Aids	As per the specific course			4
General Elective Course (*Can be opted for in place 1 DSE course)	GE 2	II	Parenting in Contemporary India Resources and Sustainability Organisational Communication: Tools and Techniques Lifestyle Modifications for Optimal Health Community Nutrition Assessment Dyeing and Printing with Natural Dyes Appreciation of Indian Textiles	As per the specific course			4
Dissertation Project/ Entrepreneurship	DP 2	II	Dissertation/Academic project/ Entrepreneurship	0	0	6	6

List of PGCF courses of M.Sc. Food and Nutrition
(Coursework + Research)
(Semester I and II of the One-year programme)

Pool of Discipline Specific Elective Courses offered in Semester I				
	Credits for each Course			
	Theory	Tutorial	Practical	Total
i. ii. Statistics and Data Management (From the common Home Science pool)	3	0	1	4
iii. Medical Nutrition Therapy	3	0	1	4
iv. Institutional Food Service management	2	0	2	4
v. Social and Cultural Aspects in Public Health Nutrition	3	0	1	4
vi. Improving Maternal, Infant, Young Child and Adolescent Nutrition	2	0	2	4
vii. Animal Products Processing and Preservation	3	0	1	4
viii. Unit Operations in Food Processing	2	0	2	4
ix. Exercise, Nutrition and Metabolism	3	0	1	4
x. Sport-Specific Nutrition	2	0	2	4
Pool of Discipline Specific Elective Courses offered in Semester II				
	Credits for each Course			
	Theory	Tutorial	Practical	Total
x. Precision Nutrition	3	0	1	4
xi. Challenges in Clinical Nutrition	2	0	2	4
xii. Nutritional Care of the Elderly	3	0	1	4
xiii. Programme Planning in Public Health Nutrition	2	0	2	4
xiv. Plant Products Processing and Preservation	3	0	1	4
xv. Food Processing Technologies	2	0	2	4
xvi. Clinical Sports Nutrition	2	0	2	4
xvii. Doping, Supplements and Ergogenic Aids	3	0	1	4

Pool of General Elective Courses offered by the Department of Home Science				
	Credits for each Course			
	Theory	Tutorial	Practical	Total
i. Parenting in Contemporary India	3	1	0	4
ii. Resources and Sustainability	3	1	0	4
iii. Organisational Communication: Tools and Techniques	3	1	0	4
iv. Lifestyle Modifications for Optimal Health	3	1	0	4
v. Community Nutrition Assessment	3	1	0	4
vi. Dyeing and Printing with Natural Dyes	3	0	1	4
vii. Appreciation of Indian Textiles	3	1	0	4

SEMESTER -I

DISCIPLINE SPECIFIC CORE COURSE
Analytical Techniques and Instrumentation

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Analytical Techniques and Instrumentation	**4**	**2**	**0**	**2**		**Nil**

Learning Objectives:

1. To understand the fundamental principles, instrumentation, and working mechanisms of major spectroscopic techniques, including UV–Visible spectroscopy, CD spectroscopy, fluorescence spectroscopy, AAS, and flame photometry.
2. To develop conceptual and practical knowledge of centrifugation techniques, including sedimentation behaviour, types of centrifuges, and their applications in biomolecule separation.
3. To understand the principles and operational methods of major chromatographic techniques such as paper chromatography, TLC, ion exchange, molecular sieve, affinity, reverse phase chromatography, HPLC, and FPLC.
4. To learn the principles of electrophoretic separation and gain familiarity with techniques such as PAGE (native), SDS-PAGE, agarose gel electrophoresis, isoelectric focusing, and 2-D gel electrophoresis.
5. To acquire basic understanding of mass spectrometry, MALDI-TOF, NMR, DSC, and XRD, along with their applications in structural and functional analysis of biomolecules.
6. To develop laboratory skills in buffer preparation, spectrophotometric analysis, chromatographic separations, protein estimation, and electrophoretic techniques.

Learning Outcomes:

- Students will understand the principles, instrumentation, and analytical applications of major spectroscopic, electrophoretic, and mass-based techniques.
- Students will be able to apply centrifugation and chromatography methods for separation, purification, and characterization of biomolecules.
- Students will interpret analytical data generated from UV-Vis, fluorescence, CD, AAS, chromatography, electrophoresis, MS, NMR, DSC, and XRD techniques.
- Students will perform key laboratory procedures including buffer preparation, λmax determination, protein estimation, chromatographic separation, and SDS-PAGE.
- Students will develop technical competence and analytical reasoning required for biochemical and biotechnological laboratory investigations.

THEORY

(Credits 2; Hours 30)

UNIT I: Spectroscopic Techniques **9 Hours**

In this unit students will learn about principles and working of key spectroscopic techniques

- Principle and working of UV-visible absorption spectrophotometry, Beer-Lambert law, Applications of UV-visible absorption spectrophotometry,
- Working and Applications of CD-spectroscopy
- Fluorescence spectrophotometry and its applications
- Atomic Absorption Spectroscopy
- Flame Photometry.

UNIT II: Separation Techniques- Centrifugation & Chromatography **11 Hours**

In this unit students will learn about principles and application of centrifugation and chromatography

- Principle of centrifugation, Sedimentation coefficient, Factors affecting sedimentation, Various types of centrifuges: Analytical ultracentrifugation, Differential centrifugation, Density gradient centrifugation- Zonal and isopycnic, Application of centrifugation.
- Introduction to chromatography, Principles and applications of Paper Chromatography, Thin Layer Chromatography, Ion Exchange Chromatography, Molecular Sieve Chromatography and Affinity Chromatography, Reverse Phase Chromatography, High Performance Liquid Chromatography (HPLC), Fast Protein Liquid Chromatography (FPLC).

UNIT III: Electrophoresis **4 Hours**

In this unit students will learn about principles and application of electrophoresis

- Principle of electrophoresis
- Polyacrylamide gel electrophoresis (Native)
- SDS PAGE
- Agarose gel electrophoresis
- Isoelectric focusing of proteins
- 2-D Gel electrophoresis and its application.

UNIT IV: Mass Spectrometry **6 Hours**

In this unit students will learn about principles and application of Mass spectrometry

- Principle and applications of mass spectrometry
- MALDI-TOF
- Nuclear magnetic resonance (NMR)
- Differential scanning calorimetry (DSC)
- X-ray diffraction (XRD).

PRACTICAL

(Credits 2; Hours 60)

1. Preparation of acidic and basic buffer.
2. Determination of absorption maxima (λmax).
3. Estimation of protein concentration by UV and Biuret method.
4. Preparation of cell free extract.
5. Separation of amino acid acids by TLC/paper chromatography.

6. Separation of proteins by Gel filtration chromatography/Ion-exchange chromatography.
7. Demonstration of SDS-PAGE.

Essential readings:

UNIT I

- Kemp, W. (2022). *Organic spectroscopy*. Bloomsbury Publishing India Pvt. Ltd.; ISBN: 9789394701250.
- Freifelder, D. (1982) *Physical Biochemistry: Applications to Biochemistry and Molecular Biology*, (2 nd ed.), W.H. Freeman and Company (New York); ISBN:0-7167- 1315-2 / ISBN:0-7167-1444-2.
- Mohan, J. (2009). *Organic spectroscopy: principles and applications*. Narosa Publishing House; ISBN: 978-8173195662.

UNIT II

- Katoch, R. (2011). *Analytical techniques in biochemistry and molecular biology*. Springer Science & Business Media.; ISBN: 978-1-4419-9784-5.
- Wilson, K. & Walker J (2010) *Principles and Techniques of Biochemistry and Molecular Biology*, (7 th ed.), Cambridge University Press; ISBN: 978-0-521-51635-8.
- Boyer, R. F. (2012) *Biochemistry Laboratory: Modern Theory and Techniques*, (6 th ed.), Boston, Mass: Prentice Hall; ISBN-13: 978-0136043027.

UNIT III

- Katoch, R. (2011). *Analytical techniques in biochemistry and molecular biology*. Springer Science & Business Media.; ISBN: 978-1-4419-9784-5.
- Wilson, K. & Walker J (2010) *Principles and Techniques of Biochemistry and Molecular Biology*, (7 th ed.), Cambridge University Press; ISBN: 978-0-521-51635-8.
- Boyer, R. F. (2012) *Biochemistry Laboratory: Modern Theory and Techniques*, (6 th ed.), Boston, Mass: Prentice Hall; ISBN-13: 978-0136043027.

UNIT IV

- Shah, V., Patel, T., & Patel K. (2025) *Instrumental Methods of Analysis*, Shaswat Publication; ISBN: 978-93-6087-858-0.
- Kemp, W. (2022). *Organic spectroscopy*. Bloomsbury Publishing India Pvt. Ltd.; ISBN: 9789394701250.
- Mohan, J. (2009). *Organic spectroscopy: principles and applications*. Narosa Publishing House; ISBN: 978-8173195662.

Suggested Readings:

- Cooper, T. G. (2011) *The Tools of Biochemistry* (2nd ed.), Wiley-Interscience Publication (New Delhi); ISBN: 13:9788126530168.
- Plummer D. T., (2015) *An Introduction to Practical Biochemistry*. 3rd ed., Tata McGraw Hill

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

DISCIPLINE SPECIFIC CORE COURSE
NUTRITIONAL EPIDEMIOLOGY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Nutritional Epidemiology	4	3	0	1		Nil

Learning Objectives

- To understand the basic epidemiological concepts and their application in nutritional epidemiology.
- To understand the principles of disease causation with emphasis on modifiable environmental factors including dietary factors.
- To comprehend the effect of measures of dietary exposure and nutrition related health outcomes on determination of diet-disease relationship.
- To understand the application of epidemiology in prevention of disease and promotion of health through nutrition.

Learning Outcomes

The students would be able to:

- Illustrate the epidemiological approach to defining and measuring occurrence of nutrition and health related conditions in population
- Describe major study designs in nutritional epidemiology and select an appropriate design for addressing a study question.
- Explain implication of study design and methods of diet and nutritional status assessment in interpreting studies in nutritional epidemiology
- Develop tool(s) for assessment of any specific dietary exposure in a population group
- Demonstrate the knowledge of epidemiological approach to causation
- Explain the role of epidemiological research in improving health and nutritional status

THEORY
(Credits 3; Hours 45)

UNIT I: Basic Concepts and Methods in Epidemiology **13 Hours**

This unit deals with principles of epidemiology and epidemiological methods. It focuses on various

study designs as well as potential errors in epidemiological studies.

- Definition, scope and purpose of epidemiology
- Basic measurements in epidemiology-Measurement of mortality, morbidity and disability - rates, ratios and proportions
- Epidemiologic study methods- design, steps in conducting the studies, data analysis and interpretation
    - Observational epidemiology- descriptive and analytical studies - ecological, cross sectional, case-control and cohort
    - Experimental epidemiology- experimental and quasi experimental trials, randomized control trials, field trials and community trials
- Association and causation in epidemiology
- Potential errors in epidemiologic studies
    - Sampling and non-sampling errors
    - Sources of measurement errors
- Precision and validity of measurements in epidemiology

UNIT II: Epidemiologic Approaches to Diet-Disease Relationships
17 Hours

This unit highlights the epidemiological principles in understanding role of nutrition in human health and/or disease. It also deals with the role of gene-diet interactions in understanding diet-disease relationships.

- Introduction to nutritional epidemiology: Definition, scope and significance of nutritional epidemiology in public health nutrition.
- Nature of dietary variation, measuring diet-disease associations- Type of measurement, time trends, correlation and regression, risk assessment
- Design of nutritional epidemiological studies, strengths and weaknesses of various designs in estimation of diet disease-relationships and their interpretation.
- Genetics in nutritional epidemiology- genetic variation and epigenetics in nutritional epidemiology- Gene diet interactions.
- Ethical aspects of research in nutritional epidemiology.

UNIT III: Exposures in Nutritional Epidemiology 12 Hours

This unit deals with various important exposures in nutritional epidemiology and critical review of their measurement method(s).

- Nutritional exposures- Relevant direct and indirect measures of nutritional assessment
    - Critical review of diet assessment methods- assessment of food consumption at different levels, measurement errors, strengths and limitations, reproducibility and validity of methods measuring food consumption of individuals- 24 dietary recall, diet record and food frequency methods, analysis of dietary patterns.

    Analysis and interpretation of dietary data.

    - Critical review of anthropometric and various direct measures of nutritional status- clinical, biochemical (nutritional biomarkers), biophysical and measures of body composition. Sources of errors, strengths and limitations of various measures. Relevance and use of various indices and indicators of nutritional status for risk assessment.

- Critical review of measures of physical activity: Strengths and weaknesses of subjective and objective assessment methods.

UNIT IV: Role of Epidemiological Research in Development of Nutrition Related Policies and their Evaluation 03 Hours

This unit highlights the role of nutritional epidemiology in generating evidence for nutrition related policies and programs to improve health and wellbeing of populations.

- Use of epidemiological research data for improvement of nutrition and health interventions or national programmes.

PRACTICAL
(Credits 1; Hours 30)

1. Critically review original research on studies in the field of nutritional epidemiology and do the following:
   - Identify research designs used, sampling, analyses and interpretation.
   - Identify applications of research evidence in the field of public health nutrition
2. Determine reliability and validity of an assessment tool
3. Estimate measurement error in anthropometric data
   - Interpret anthropometric data available from national and regional surveys
4. Review and document the changes in nutrition and health problems in vulnerable groups of the population in the last decade using secondary data (Indicators of mortality, morbidity, disability and nutritional status).

Essential Readings

UNIT I

- Bonita, R., Beaglehole, R., Kjellström T. (2006) Basic Epidemiology, 2nd Edition, WHO, 2006 http://whqlibdoc.who.int/publications/2006/9241547073_eng.pdf
- Park, K. (2025). Park's textbook of preventive and social medicine (28th ed.). Banarsidas Bhanot Publishers
- Vir, S.C. (2021). Public Health Nutrition in Developing Countries. Volume-II (2nd ed.) Woodhead Publishing India Pvt Ltd.
- Boyle, M. A. (2022). Community Nutrition in Action (8th ed.). Cengage Learning.

UNIT II

- Willett, W. (2013). Nutritional Epidemiology, Third Edition, Oxford University Press.
- Gibson, R. S. (2005). Principles of Nutritional Assessment. 2nd ed. Oxford University Press, Oxford, UK.
- Edelstein, S. (2023). Community and public health nutrition (5th ed.). Jones & Bartlett Learning.

UNIT III

- Willett, W. (2013). Nutritional Epidemiology, Third Edition, Oxford University Press.
- Gibson, R. S. (2005). Principles of Nutritional Assessment. 2nd ed. Oxford University Press, Oxford, UK.
- Buttriss, J. L., Welch, A. A., Kearney, J. M., & Lanham-New, S. A. (Eds.). (2017). Public health nutrition (2nd ed.). Wiley Blackwell.

UNIT IV

- Willett, W. (2013). Nutritional Epidemiology, Third Edition, Oxford University Press.
- Barth, M. M., Bell, R. A., & Grimmer (Somers), K. (Eds.). (2020). Public health nutrition: Rural, urban, and global – Community-based practice. Springer Publishing Company.
- Ministry of Health & Family Welfare. (2019). National Family Health Survey (NFHS-5) India 2019–21: State fact sheets. Government of India. https://rchiips.org/nfhs/factsheet_NFHS-5.shtml
- Ministry of Health & Family Welfare. (2018). Comprehensive National Nutrition Survey (CNNS) India 2016–18: National report. Government of India & UNICEF.
- NITI Aayog. (2017). National nutrition strategy: Nourishing India. Government of India.

Suggested Readings:

- Moon, G., Gould, M. (2000). Epidemiology: An Introduction. Philadelphia, Open University Press
- Langseth L. (1996). Nutritional Epidemiology: Possibilities and Limitations. Washington DC, ILSI Press.
- Gordis L. Epidemiology. 5th ed. Philadelphia, PA: Saunders Elsevier, 2013
- Aschengrau A., Seage G.R. (2014) Essentials of Epidemiology in Public Health. 3rd ed. Sudbury, MA: Jones & Bartlett.
- Gibney, M.J., Margetts, B.M., Kearney, J.M., Arab, L. (Eds) (2004) Public Health Nutrition. NS Blackwell Publishing
- **Alive & Thrive. (n.d.).** How to: A guide to effective nutrition advocacy. Alive & Thrive. https://www.aliveandthrive.org/en/resources/guidance-on-effective-nutrition-advocacy
- **1,000 Days. (n.d.).** The International Coalition for Advocacy on Nutrition (ICAN). 1,000 Days. https://thousanddays.org/ican/
- Dietary Guidelines for Indians, (2024). National Institute of Nutrition, Indian Council for Medical Research, Government of India. https://www.nin.res.in/dietaryguidelines/pdfjs/locale/DGI07052024P.pdf
- Ministry of Women and Child Development. (2018). Transforming nutrition in India: POSHAN Abhiyaan—A progress report (December 2018). Government of India. https://www.niti.gov.in/sites/default/files/2020-02/POSHAN_Abhiyaan_first_progress_report_6_Feb_2019.pdf
- International Institute for Population Sciences (IIPS), National Programme for Health Care of Elderly (NPHCE), Ministry of Health and Family Welfare, Harvard T. H. Chan School of Public Health, & University of Southern California. (2020). Longitudinal Ageing Study in India (LASI) wave 1, 2017–18: India report. International Institute for Population Sciences.
- Longvah, T., Ananthan, R., Bhaskarachary, K., & Venkaiah, K. (2017). Indian food composition tables. National Institute of Nutrition, Indian Council of Medical Research.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
STATISTICS AND DATA MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Statistics and Data Management	4	3	0	1		Nil

Learning Objectives

- To develop understanding of fundamental and advanced statistical concepts used in research and data analysis.
- To enable students to apply descriptive and inferential statistics for real-world decision-making.
- To strengthen ability to formulate hypotheses, select appropriate statistical tests, and interpret outputs.
- To prepare students for quantitative research, industry analytics, and academic data projects.
- To train students in using Excel and SPSS for data handling, visualization, and interpretation.

Learning Outcomes

The students would be able to:

- Explain key concepts in descriptive and inferential statistics.
- Organize, clean, and summarize datasets using appropriate statistical tools.
- Apply probability distributions, correlation, regression, and hypothesis testing.
- Use Excel and SPSS for data visualization, statistical testing, and reporting.
- Interpret statistical outputs and draw valid conclusions for research decisions.
- Design and execute quantitative data analysis workflows independently.

THEORY

(Credits 3; Hours 45)

UNIT I: Introduction and descriptive Statistics **12 Hours**

This unit will introduces the foundations of statistics and techniques for summarizing and describing data.

- Definition, scope, and applications of statistics
- Types of data: qualitative and quantitative
- Scales of measurement
- Classification & tabulation of data
- Graphical and visual representations
- Measures of central tendency: mean, median, mode
- Measures of dispersion: range, variance, standard deviation, coefficient of variation
- Skewness and kurtosis: meaning and interpretation

UNIT II: Probability and Probability Distributions **10 Hours**

This unit explores probability concepts and major statistical distributions.

- Basic probability concepts: Addition & multiplication theorems
- Random variables: discrete and continuous variable
- Binomial, Poisson and Normal distributions
- Sampling theory & sampling distributions
- Central Limit Theorem

UNIT III: Correlation and regression **8 Hours**

This unit focuses on analysing relationships between variables.

- Correlation: Pearson and Spearman correlation
- Simple linear regression: model, estimation, interpretation
- Multiple linear regression: assumptions, multicollinearity, model building

UNIT IV: Hypothesis Testing and Non-Parametric Methods **15 Hours**

This unit introduces hypothesis testing frameworks and non-parametric alternatives for non-normal data.

- Concept of hypothesis: null & alternative
- Types of errors, significance levels, p-value
- Parametric tests:
    - z-test
    - t-test (one sample, independent, paired)
    - ANOVA- One way
    - Chi-square test
- Non-parametric tests:
    - Mann–Whitney U test
    - Wilcoxon signed-rank test
    - Kruskal–Wallis test

- Interpretation and reporting of statistical results
- Research Conclusion and recommendation

Practical

(Credits 1; 30 hours)

1. Data Entry, Coding & Cleaning: Importing data, handling missing values, variable labels, Excel formulas.
2. Descriptive Statistics & Visualization: Mean, Standard Deviation, frequency tables, histograms, boxplots (Excel + SPSS).
3. Cross-Tabulation & Chi-Square Test: PivotTables in Excel; Crosstabs in SPSS.
4. Correlation Analysis: Pearson & Spearman correlations; scatterplots.
5. Simple Linear Regression: Trendline in Excel; Regression output in SPSS.
6. Multiple Regression: Model summary, coefficients, interpretation using SPSS.
7. t-Tests: Independent, paired, and one-sample t-tests in SPSS.
8. ANOVA (One-way & Two-way): Running ANOVA and post-hoc analysis.
9. Non-Parametric Tests: Mann-Whitney, Wilcoxon, Kruskal–Wallis in SPSS.
10. Report Generation & Interpretation
11. Preparing APA-style tables, graphs, and interpretations in Excel/SPSS.

Essential Readings:

UNIT I

This unit describes the foundations of statistics and techniques for summarizing and describing data.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.). Pearson Prentice Hall.
- Bernard, H. R. (2000). *Social research methods: Qualitative and quantitative approaches*. Sage.
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.). CreateSpace Independent Publishing Platform.
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*. Wiley.

UNIT II

This unit deals with the probability concepts, rules of probability, discrete and continuous distributions (Binomial, Poisson, Normal).

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).

- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*.

UNIT III

This unit focuses on relationship between variables, correlation coefficients, simple and multiple regression, regression assumptions.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Muijs, D. (2004). *Doing quantitative research in education with SPSS*. Sage.

UNIT IV

The UNIT deals with statistical inference such as t-tests, ANOVA, Chi-square, non-parametric tests (Mann-Whitney, Wilcoxon, Kruskal-Wallis), decision making.

- Agresti, A., & Franklin, C. A. (2009). *Statistics: The art and science of learning from data* (2nd ed.).
- Diez, D. M., Barr, C. D., & Cetinkaya-Rundel, M. (2015). *OpenIntro statistics* (3rd ed.).
- Minium, E. W., King, B. M., & Bear, G. (2004). *Statistical reasoning for psychology and education*.
- Muijs, D. (2004). *Doing quantitative research in education with SPSS*.

Suggested Readings

- Field, A. (2025). *Discovering Statistics Using IBM SPSS Statistics* (6th ed.). Sage.
- Kalyanaraman, K., Ramanathan, H. N., & Harikumar, P. N. (2025). *Statistical Methods for Research: A Step-by-Step Approach Using IBM SPSS*. Atlantic Publishers.
- Healey, J. F., & Donoghue, C. (2021). *Statistics: A Tool for Social Research and Data Analysis* (11th ed.).

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

MEDICAL NUTRITION THERAPY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Medical Nutrition Therapy	4	3	0	1		Nil

Learning Objectives

- To understand the nutrition support for hospitalized patients.
- To examine the etiology, pathophysiology and metabolic alterations associated with various disorders/diseases and to provide appropriate nutrition care and medical nutrition therapy (MNT).
- To develop essential skills in dietary counseling for the effective management of diverse disease conditions.

Learning Outcomes

The students would be able to:

- Develop an understanding about the basic principles of providing nutrition support to hospitalized patients
- Attain comprehensive knowledge of the etiolgy, pathophysiology, metabolic anomalies, and corresponding medical nutrition therapy for a wide range of disorders/diseases.
- Apply fundamental principles of dietary counseling to support nutrition management across various disease conditions.

THEORY

(Credits 3; Hours 45)

UNIT I: Nutrition support system **7 Hours**

This unit will highlight the basic principles, indications, contraindications, access routes, nutrient composition, complications and guidelines on enteral and parenteral nutrition.

- Enteral and Parenteral Nutrition
- International and National Guidelines on Enteral and Parenteral Nutrition

UNIT II: MNT for Hepatic Disorders

7 Hours

Students will understand the etiopathophysiology, metabolic & clinical aberrations, diagnosis, complications, treatment, MNT and recent advances in disorders and also be trained on disease specific dietary counseling.

- End stage liver disease (ESLD)

- Hepatic Encephalopathy
- Liver resection and transplant

UNIT III: MNT for Cardiovascular Disorders 11 Hours

This unit explains the etiopathophysiology, metabolic & clinical aberrations, diagnosis, complications, treatment, MNT and recent advances in different diseases/disorders. Students will also be trained on disease specific dietary counseling.

- Ischemic Heart Disease (compensated and decompensated)
- Rheumatic Heart Disease
- Coronary artery bypass graft (CABG), angioplasty
- Cerebrovascular and peripheral vascular disease
- Heart transplant

UNIT IV: MNT for Renal Disorders 20 Hours

This unit will provide an understanding of etiopathophysiology, metabolic & clinical aberrations, diagnosis, complications and recent advances in prevention, treatment, MNT and dietary Counselling in kidney disorders.

- Nephrotic Syndrome
- Glomerulonephritis
- Acute Renal Failure
- Chronic Kidney Disease
- End Stage Renal Disease (ESRD)
- Dialysis, Transplant, Renal Stones

PRACTICAL
(Credits 1; Hours 30)

1. Market Survey for commercial nutritional therapeutic products
2. Planning & preparation of diets for the following conditions:
   - Hepatic Encephalopathy
   - Liver Transpalant
   - Ischemic Heart Disease
   - Nephritis
   - Acute Renal Failure
   - Chronic renal failure
   - Patients on dialysis

Essential Readings

UNIT 1

Students will be introduced to the access routes, indications, contraindications, nutrient composition, complications and guidelines on enteral and parenteral nutrition.

- Indian Dietetics Association, (2018). Clinical Dietetics Manual, 2nd ed. Elite Publishing House Pvt. Ltd. (ISBN: 9788193599648)
- Joshi Y K. (2008). Basics of Clinical Nutrition 2nd ed. Jaypee Brothers Medical Publishers. (ISBN: 978-9350251768)
- Mahan, L.K. and Escott-Stump, S. (2021). Krause‘s Food Nutrition and Nutrition Care Process, 16th Edition, Elsevier Pvt. Ltd. (ISBN: 032381025X)

- ESPEN guidelines: https://www.espen.org/guidelines/espen-practical-guidelines-pdf-versions
- ASPEN guidelines: https://nutritioncare.org/clinical-resources/guidelines-standards/

UNIT II

Students will learn about etiology, metabolic and clinical abnormalities, diagnosis, complications, treatment, MNT, new advancements and counseling in liver disease.

- Indian Dietetics Association, (2018). Clinical Dietetics Manual, 2nd ed. Elite Publishing House Pvt. Ltd. (ISBN: 9788193599648)
- Joshi Y K. (2008). Basics of Clinical Nutrition 2nd ed. Jaypee Brothers Medical Publishers. (ISBN: 978-9350251768)
- Khanna K, Gupta S, Seth R, Passi SJ, Seth R, Mahna R, Puri S (2013). Textbook of Nutrition and Dietetics.2nd Edn. Phoenix Publishing House Pvt. Ltd.
- Mahan, L.K. and Escott-Stump, S. (2021). Krause's Food Nutrition and Nutrition Care Process, 16th Edition, Elsevier Pvt. Ltd. (ISBN: 032381025X)
- Seth, V. and Singh K. (eds.) (2024). Principles of Medical Nutrition Therapy for Positive Clinical Outcomes, 2nd Edition. Elite Publishing House Pvt. Ltd.
- Role of Nutrition in the Management of Hepatic Encephalopathy in End-Stage Liver Failure: https://pmc.ncbi.nlm.nih.gov/articles/PMC3017957/
- ESPEN Guidelines on clinical nutrition in liver disease: https://www.espen.org/files/ESPEN-Guidelines/ESPEN_practical_guideline_Clinical_nutrition_in_liver_disease.pdf
- Indian standard treatment guidelines organ transplant: Liver: https://clinicalestablishments.mohfw.gov.in/sites/default/files/standard-treatment-guidelines/1511.pdf

UNIT III

This unit covers the etiopathophysiology, metabolic and clinical abnormalities, diagnosis, consequences, treatment, MNT, and current developments and counseling in cardiovascular disease.

- British Nutrition Foundation (Ed.), Stanner, S. (Ed.), Coe, S. (Ed.), & Frayn, K. N. (Managing Ed.). (2019). Cardiovascular disease: Diet, nutrition and emerging risk factors (2nd ed.). Wiley-Blackwell. (ISBN: 978-1-118-82991-2)
- Indian Dietetics Association, (2018). Clinical Dietetics Manual, 2nd ed. Elite Publishing House Pvt. Ltd. (ISBN: 9788193599648)
- Joshi Y K. (2008). Basics of Clinical Nutrition 2nd ed. Jaypee Brothers Medical Publishers. (ISBN: 978-9350251768)
- Khanna K, Gupta S, Seth R, Passi SJ, Seth R, Mahna R, Puri S (2013). Textbook of Nutrition and Dietetics.2nd Edn. Phoenix Publishing House Pvt. Ltd.
- Mahan, L.K. and Escott-Stump, S. (2021): Krause's Food Nutrition and Nutrition Care Process, 16th Edition, Elsevier Pvt. Ltd. (ISBN: 032381025X)
- Seth, V. and Singh K. (eds.) (2024) Principles of Medical Nutrition Therapy for Positive Clinical Outcomes, 2nd Edition. Elite Publishing House Pvt. Ltd.
- Diet and Cardiovascular Disease: Advances and Challenges in Population-based Studies: https://pmc.ncbi.nlm.nih.gov/articles/PMC5844273/

UNIT IV

Students will learn about etiology, metabolic and clinical abnormalities, diagnosis, complications, treatment, MNT, new advancements and counseling in kidney disease.

- Gonyea, J. E., & Phillips, S. C. (Eds.). (2023). Clinical guide to nutrition care in kidney

disease (3rd ed.). Academy of Nutrition and Dietetics. (ISBN-13: 978-0-88091-201-3)
- Indian Dietetics Association, (2018) Clinical Dietetics Manual, 2nd Edition. Elite Publishing House Pvt. Ltd. (ISBN: 9788193599648)
- Joshi Y K. (2008). Basics of Clinical Nutrition 2nd ed. Jaypee Brothers Medical Publishers. (ISBN: 978-9350251768)
- Khanna K, Gupta S, Seth R, Passi SJ, Seth R, Mahna R, Puri S (2013). Textbook of Nutrition and Dietetics.2nd Edn. Phoenix Publishing House Pvt. Ltd.
- Mahan, L.K. and Escott-Stump, S. (2021): Krause's Food Nutrition and Nutrition Care Process, 16th Edition, Elsevier Pvt. Ltd. (ISBN 032381025X)
- Seth, V. and Singh K. (eds.) (2024) Principles of Medical Nutrition Therapy for Positive Clinical Outcomes, 2nd Edition. Elite Publishing House Pvt. Ltd.
- KDIGO 2024 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease: https://kdigo.org/wp-content/uploads/2024/03/KDIGO-2024-CKD-Guideline.pdf

Suggested Readings

- Chowdhary S.R and Aeri B.T. (2023) Textbook of Food Science and Nutrition. Aarahan Publishers. ISBN:978-93-87270-08-4
- Gibney MJ, Elia M, Ljungqvist &Dowsett J. (2005) Clinical Nutrition. The Nutrition Society Textbook Series. Blackwell Publishing Company
- ICMR (2020) Estimated Average Requirements and Recommended Dietary Allowances for Indians. Published by National Institute of Nutrition, Hyderabad.
- Longvah T, Ananthan R, Bhaskarachary K and Venkaiah K (2017). Indian Food Composition Tables. National Institute of Nutrition, ICMR, Hyderabad.
- Puri S, Bhagat A, Aeri, BT, Sharma A (2019). Food Exchange List: A Tool for meal Planning. Elite Publishing House. New Delhi.
- Shils, M.E., Shike, M, Ross, A.C., Caballero B and Cousins RJ (2005) Modern Nutrition in Health and Disease. 10th ed. Lipincott, William and Wilkins.
- Siddhu A, Bhatia N, Singh K, Gupta S (2017). Compilation of food exchange list, technical series 6, Lady Irwin College, University of Delhi. Publ. Global Books Organisation, Delhi
- Williams, S.R. (2001) Basic Nutrition and Diet Therapy. 11th ed. Times Mirror Mosby College Publishing

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

DISCIPLINE SPECIFIC ELECTIVES COURSE

INSTITUTIONAL FOOD SERVICE MANAGEMENT

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Institutional Food Service Management DSE FN 303	**4**	**2**	**0**	**2**		**Nil**

Learning Objectives

- To develop a knowledge base about the facilities required for different types of food service UNITs
- To equip individuals in understanding and managing resources in a food service institution
- To provide practical skills necessary to manage food service operations in institutional settings

Learning Outcomes

- Gain expertise to function as a food service manager.
- Understand and manage resources in a food service institution.
- Acquire practical experience in managing food service operations for food service UNITs ensuring quality, safety, efficiency and customer satisfaction

THEORY
(Credits 2; Hours 30)

UNIT I: Managing Catering Processes **5 Hours**

In this unit, the students will learn about the management approaches and tools used by managers in food service operations.

- Approaches to management: Classical, Systems approach, Management by Objective, Just-in Time, Total Quality Management
- Tools of Management:
  Tangible Tools: Organization chart, Job description, Job specification, Job analysis, Work schedule, Production schedule, Staff and service analysis statements
  Intangible Tools: Communication, Leadership, Decision making

UNIT II: Food Production and Service **12 Hours**

In this unit, the students will learn the components of food production cycle and quality compliance in food service UNITs.

- Food production process
- Meal Ordering Systems (Manual, EMO's)
- Food service in hospitals
- Quality Assurance and accreditation in Food service and health care systems- FSSAI, HACCP, GMP, GHP, NABH, JCI

UNIT III: Management of Resources 10 Hours

In this unit, students will understand the management of space, equipment, personnel and finances in food service institutions.

- Space and Equipment: Steps in layout planning and architectural features, Feasibility assessment in terms of layout planning
- Personnel: Components of an integrated staffing system, Dealing with employee behaviour, Techniques of motivating employees, Labour Laws
- Managing Finances: Records, Reports, Components of costs and factors affecting costs, Financial accounting, Pricing methods, concept of BEP

UNIT IV: Marketing and Sales Management 3 Hours

In this unit, the students will understand the marketing principles and strategies relevant to institutional food service.

- Product Differentiation, SWOT Analysis
- Marketing techniques and strategies, Marketing mix
- Sales Management

PRACTICAL
(Credit 2; Hours 60)

1. Market survey of food service organizations 4 Hours

Market survey of food service organizations to understand the food production and service areas, equipment, labour requirements, marketing and records

2. Planning menus for the following: 20 Hours

- Conference/ Buffet
- Two-day menu for a super specialty hospital
- Three-day menu for a college canteen

3. Quantity cooking: Food stall 28 Hours

- Menu planning
- Standardizing recipes and scaling up to 50/100 portions
- Development of sales promotion tool
- Conduct of project

4. Promoting good hygiene and sanitation practices in a food service UNIT 8 Hours

- Development of tool/aid to promote good hygiene practices
- Training of food service UNIT personnel in development of healthy menus and good hygiene practices
- Conduct of FSSAI checklist in the food service UNIT for good hygiene practices

Essential Readings

UNIT I

- Sethi, M. (2005) Institutional Food Management, New Age International Publishers.
- West, B. and Wood, L. (1988) Food Service in Institutions 6th Edition, John Wiley and Sons.

UNIT II

- Payne- Palacio, J. and Theis, M. (2015) Food service Management: Principles and Practices. 13th ed. Pearson Education.
- Prgomet, M., Li, J., Li, L., Georgiou, A., & Westbrook, J. I. (2019). The impact of electronic meal ordering systems on hospital and patient outcomes: A systematic review. International Journal of Medical Informatics, 129, 275–284.
- Sethi, M. (2005) Institutional Food Management, New Age International Publishers.
- West, B. and Wood, L. (1988) Food Service in Institutions 6th Edition, John Wiley and Sons

UNIT III

- Payne- Palacio, J. and Theis, M. (2015) Food service Management: Principles and Practices. 13th ed. Pearson Education.
- Sethi, M. (2005) Institutional Food Management, New Age International Publishers.
- West, B. and Wood, L. (1988) Food Service in Institutions 6th Edition, John Wiley and Sons
- Desai, V. (2011) The Dynamics of Entrepreneurial Development and Management, Himalya Publishing House Pvt. Ltd., Mumbai.

UNIT IV

- Payne- Palacio, J. and Theis, M. (2015) Food service Management: Principles and Practices. 13th ed. Pearson Education.
- Sethi, M. (2005) Institutional Food Management, New Age International Publishers.
- Desai, V. (2011) The Dynamics of Entrepreneurial Development and Management, Himalya Publishing House Pvt. Ltd., Mumbai.

Suggested Readings

- Knight, J. B. and Kotschevar, L.H. (2000) Quantity Food Production Planning & Management 3rd edition, John Wiley & Sons.
- Kotas, R. and Jayawardardene, C. (1994) Profitable Food and Beverage Management, Hodder & Stoughton Publications.
- Roday, S. (2003) Food Hygiene and Sanitation, Tata McGraw Hill Publication Ltd.
- Taneja, S. and Gupta, S.L. (2001) Entrepreneurship Development. Galgotia Publishing.
- Dessler, G. (2007) Human Resource Management 11th edition Prentice Hall New Jersey.
- Basic Food Safety Training Manual Catering (http://www.fssai.gov.in/home/capacity building/e-library/training-manual.html).

- Street Food Vendor Training on Food Safety and Hygiene (http://www.fssai.gov.in/home/capacity building/e-library/training-manual.html).

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
SOCIAL AND CULTURAL ASPECTS IN PUBLIC HEALTH NUTRITION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Social and Cultural Aspects in Public Health Nutrition	**4**	**3**	**0**	**1**		**Nil**

Learning Objectives

- To explore how socio-cultural factors influence food and nutrition, both historically and in contemporary contexts.
- To examine the social and cultural determinants of food choices and diet-related behaviours.
- To understand the value of cultural knowledge in guiding nutrition practices.

Learning Outcomes

The students would be able to:

- Explain the social and cultural importance of food and its connection to biological aspects of nutrition.
- Analyze historical and current dietary practices and food consumption patterns across cultures.
- Evaluate the impact of social and cultural factors on food choices and dietary behaviours.
- To comprehend the significance of culturally appropriate nutrition interventions.

THEORY
(Credits 3; Hours 45)

UNIT I: Food, Nutrition, and Culture aspects in public health 10 Hours

This unit deals with the social and cultural significance of food, its integration with biological aspects of nutrition, It also explores cross-cultural differences and acculturation in food behaviours.

- Ethnological perspectives: social and cultural roles of food
- Integration of biological and socio-cultural aspects of food and nutrition
- Overview of Indian food anthropology

UNIT II: Historical and current Perspectives of culture and food consumption 10 Hours

This unit explores the and historical versus current dietary practices and cultural differences in eating patterns

- Dietary practices and consumption patterns: historical and current perspectives, including health concerns
- Cross-cultural differences in eating behaviour
- Cultural integrity and acculturation in food choices

UNIT III: Food Choices and Diet-Related Behaviour: Social and Cultural Influences
18 Hours

This unit focuses on the influence of the food environment, socio-cultural practices, demographics, and other factors on dietary behaviours. It also includes culture-specific taboos and their role in promoting sustainable, healthy diets.

- Relationship between food environment and dietary practices
- Influence of social structures, demographic factors, cultural values, religious beliefs, and policy on food behaviour
- Culture-specific foods and taboos affecting children, adolescents, pregnant, and lactating women
- Socio-cultural influences on sustainable, healthy diets

UNIT IV: Cultural Knowledge in Nutrition **7 Hours**

This unit highlights the role of cultural understanding in shaping food behaviour and delivering culture-specific dietary guidance.

- Influencing changes in food choices and dietary patterns
- Cultural interpretations of malnutrition
- Significance of cultural competence in the practice of public health nutrition - Providing culturally sensitive dietary advice and guidance

PRACTICAL
(Credits 1; Hours 30)

1. Studying staple foods and ethnic cuisines from different regions of India and the world
2. Exploring traditional foods for special occasions across cultures
3. Observing and reporting dietary patterns among individuals of different religions
4. Comparing food habits of migrants with their traditional diets
5. Investigating food waste behaviours across cultures
6. Examining regional diets during pregnancy and infant/child feeding practices
7. Assessing the impact of globalization on food environments and dietary practices

Essential Readings

UNIT I

- Antani, V., Mahapatra, S. (2022). Evolution of Indian cuisine: a socio-historical review. *J. Ethn. Food,* 9, 15. https://doi.org/10.1186/s42779-022-00129-4
- Dufour, D.L., Goodman, A.H. and Pelto, Gretel H. (2012). Nutritional Anthropology: Biocultural Perspectives on Food and Nutrition. 2nd Edition. Oxford University Press.
- Nambiar, V. (2021). Indian Food Anthropology and the Eat Right Movement. Volume I & II. Selective & Scientific Books, New Delhi.

UNIT II

- Dufour, D.L., Goodman, A.H. and Pelto, Gretel H. (2012). Nutritional Anthropology: Biocultural Perspectives on Food and Nutrition. 2nd Edition. Oxford University Press.
- Sanjur, D. (1982). Social and Cultural Perspectives in Nutrition. Prentice Hall.

UNIT III

- Buttriss, J.L., Welch, A. A., Kearney, J.M., Lanham-New, S.A. (Eds.). (2017). Public Health Nutrition (2nd Ed.). Wiley Blackwell.
- Dufour, D.L., Goodman, A.H. and Pelto, Gretel H. (2012). Nutritional Anthropology: Biocultural Perspectives on Food and Nutrition. 2nd Edition. Oxford University Press.
- Edelstein, S. (2023). Community and public health nutrition (5th ed.). Jones & Bartlett Learning.
- McWilliams, M. (2010). Food Around the World: A Cultural Perspective. Second Edition. Pearson Education.

UNIT IV

- Boyle, M. A. (2022). Community Nutrition in Action (8th ed.). Cengage Learning.
- Edelstein, S. (2023). Community and public health nutrition (5th ed.). Jones & Bartlett Learning.
- Sanjur, D. (1982). Social and Cultural Perspectives in Nutrition. Prentice Hall.

Suggested Readings

- Achaya, K.T. (1998). Indian Food. Oxford.
- Farb, P. and G. Armelagos. (1980). Consuming Passions: The Anthropology of Eating. Houghton Mifflin Harcourt.
- Germov, J. & Williams, L. (Eds.). (2009). A Sociology of Food and Nutrition: The Social Appetite. 3rd Edition. Oxford University Press.
- Gibney, M.J., Margetts, B.M., Kearney, J.K., & Arab, L. (Eds.) (2004). Public Health Nutrition. Wiley-Blackwell.
- Harris, M. (1987). Foodways: historical overview and theoretical prolegomenon. In: Harris, M. and E. B. Ross (eds.) Food and Evolution: Toward a Theory of Human Food Habits. Philadelphia: Temple University Press.
- Higman, B.W. (2011). How Food Made History. 1st Edition. Wiley-Blackwell.
- Le, S. (2018). 100 Million Years of Food: What Our Ancestors Ate and Why It Matters Today. Reprint Edition. Picador.
- McIntosh, Wm. A. (1996). Sociologies of Food and Nutrition. Springer New York.
- Seal, PP. (2023). Food Anthropology in India. Routledge India.
- Sidney, C.H.C. & Tan, C. (2007). Food and Foodways in Asia: Resource, Tradition and Cooking. 1st Edition. Routledge.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

IMPROVING MATERNAL, INFANT, YOUNG CHILD AND ADOLESCENT NUTRITION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Improving Maternal, Infant, Young Child and Adolescent Nutrition	**4**	**2**	**0**	**2**		**Nil**

Learning Objectives

- To understand the nutritional concerns during pregnancy, lactation, infant, young children and adolescence.
- To gain insight into key nutrition challenges and major maternal, child, and adolescent nutrition policies and programs
- To learn the principles of optimal infant and young child feeding practices.
- To develop skills for effective counselling to promote optimal nutrition for mothers, young children, and adolescents.

Learning Outcomes

The students would be able to:

- Explain the nutritional concerns of mothers during pregnancy and lactation, as well as those of infants, young children, and adolescents.
- Describe the principles of optimal infant and young child feeding practices.
- Demonstrate effective counselling skills to support and promote appropriate nutrition practices among mothers, young children, and adolescents.
- Analyse major nutrition concerns affecting maternal, child, and adolescent health.
- Interpret and evaluate key national flagship policies and programs related to maternal, child, and adolescent nutrition.

THEORY
(Credits 2; Hours 30)

UNIT I: Overview and importance of MIYCAN- linkages of MIYCAN with SDGs 4 Hours

This unit lays thrust on importance of the MIYCAN period and its links to national goals and the SDGs.

- Overview and Importance of MIYCAN period
- Linkages between MIYCAN period and National goals and Sustainable Development Goals (SDGs)

UNIT II: Improving Nutrition During Pregnancy and Lactation 10 Hours

This unit deals with maternal nutrition, key concerns, cultural influences, health risks, and management of nutrition-related pregnancy conditions, as well as the impact of diet on fetal

growth. It was deals with lactation support, guidelines and programs, community interventions, and essential counselling practices related to maternal nutrition.

- Nutritional needs during pregnancy and lactation- changes in macronutrient and micronutrient needs
- Nutritional concerns in prenatal and postnatal maternal nutrition, Cultural practices influencing maternal nutrition
- Major causes of maternal mortality and morbidity
- Management of common pregnancy-related disorders such as underweight, overweight, nutritional anaemias, pregnancy-induced hypertension, and gestational diabetes
- Relationship between maternal diet and birth outcomes; Impact of nutrient deficiencies on fetal growth and development, Low birth weight, preterm birth, and intrauterine growth restriction (IUGR); Role of maternal nutrition in brain development
- Lactation counselling and support, human milk banking, and strategies to promote effective breastfeeding.
- Guidelines for maternal nutrition- DGI, Nutrition Supplements, etc.; Maternal nutrition services under government programs; Community-based interventions for improving maternal nutrition
- Key nutrition counselling points for maternal nutrition

UNIT III: Infant and Young Child Nutrition **10 Hours**

This unit highlights the nutritional needs of infants and young children, patterns of mortality and common illnesses, preventive health measures, optimal feeding practices, and care of small and sick infants including growth monitoring and SAM management. It also covers key policies and programmes supporting child nutrition and essential counselling practices for caregivers.

- Nutritional needs during infancy and young child years- changes in macronutrient and micronutrient needs, significance of 1000 days
- Neonatal, infant, and child mortality patterns; Common childhood illnesses and nutrition-related morbidities; Preventive and promotive health measures (immunization, hygiene, deworming, early stimulation)
- Nurturing Care Framework, Guidelines for optimal infant and young child feeding; Exclusive breastfeeding - benefits, techniques, challenges; Appropriate complementary feeding practices (timing, consistency, frequency, diversity); Responsive feeding and hygiene practices,
- Care of small and sick infants – Kangroo Mother Care, management of diarrhoea and upper respiratory tract infections (ARI). Growth monitoring and identification of malnourished children including SAM Children. Management of SAM children
- Policies and programmes addressing infant and young child nutrition (e.g., ICDS, HBNC, HBYC, MAA, IMNCI, IDCT etc.)
- Key nutrition counselling points for infant and young child nutrition

UNIT IV: Adolescent Nutrition **6 Hours**

This unit deals with adolescent nutrient needs, major nutrition concerns, their impact on future health, relevant policies and programmes, and key counselling points for healthy development.

- Nutritional needs during adolescent years- changes in macronutrient and micronutrient needs
- Impact of adolescent nutrition on future maternal and adult health; Key concerns like anemia, undernutrition, overweight/obesity, eating behaviours
- Policies and programmes addressing adolescent nutrition (e.g., ICDS, Supplementary nutrition programmes, School meal programmes, RBSK, RKSK)
- Key nutrition counselling points for adolescent nutrition

PRACTICAL
(Credits 2 ; Hours 60)

1. Gathering and analysing nutrition related indicators for pregnant and lactating women/ infants/ young children/ adolescents
2. Preparation of educational aid on adequate care and nutrition during pregnancy/ nursing mothers/ optimal infant and young child feeding practices/ adolescent girls on importance of adequate nutrition
3. Preparation of educational aid on prevention and management of diarrhoea/ importance and schedule of immunization/ importance of hygiene and sanitation.
4. Planning counselling sessions for nursing mothers for different techniques of breast feeding/ breastfeeding related problems/ expression of breastmilk/ kangaroo mother care etc.
5. Conduct activity to demonstrate age specific complementary food preparation for infants and young children (7 months/ 10 months/1.5 years).
6. Preparation and presentation of information card about various schemes related to maternal, child and adolescent nutrition.
7. Field visit to any ongoing national level programs related to maternal, child, and adolescent nutrition
8. Preparation of case study from field observations related to any one nutrition problem among maternal and child nutrition and health in India.
9. Preparation and presentation of information card about various the national/international organizations working in the field of maternal and child health and nutrition.

Essential Readings

UNIT I

- Park, K. (2025). Park's textbook of preventive and social medicine (28th ed.). Banarsidas Bhanot Publishers
- Vir, Sheila C (2021). Public Health Nutrition in developing Countries Part 1and 2. Woodhead Publishing India Limited

UNIT II

- Dietary Guidelines for Indians, (2024). National Institute of Nutrition, Indian Council for Medical Research, Government of India. https://www.nin.res.in/dietaryguidelines/pdfjs/locale/DGI07052024P.pdf
- Vir, Sheila C (2024). Child, Adolescent and Women Nutrition in India: Public Policies, Programmes and Progress. New Delhi: Routledge.
- Vir, Sheila C (2021). Public Health Nutrition in developing Countries Part1 and 2. Woodhead Publishing India Limited
- Bamji MS, Krishnaswamy K and Brahmam GNV (Eds) (2016). Textbook of Human Nutrition, 4th edition. Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi.
- World Health Organization (2016). WHO recommendations on antenatal care for a positive pregnancy experience, Geneva, Switzerland.
- Wadhwa A and Sharma S (2003). Nutrition in the Community-A Textbook. Elite PublishingHouse Pvt. Ltd. New Delhi.

UNIT III

- Dietary Guidelines for Indians, (2024). National Institute of Nutrition, Indian Council for Medical Research, Government of India. https://www.nin.res.in/dietaryguidelines/pdfjs/locale/DGI07052024P.pdf
- Vir, Sheila C (2024). Child, Adolescent and Women Nutrition in India: Public Policies, Programmes and Progress. New Delhi: Routledge.
- Vir, Sheila C (2021). Public Health Nutrition in developing Countries Part 1and 2. Woodhead Publishing India Limited
- Guidelines for Enhancing Infant and Young Child Feeding Practices (2013). Ministry of

Health and Family Welfare, Government of India.
- Bamji MS, Krishnaswamy K and Brahmam GNV (Eds) (2016). Textbook of Human Nutrition, 4th edition. Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi.
- Wadhwa A and Sharma S (2003). Nutrition in the Community-A Textbook. Elite PublishingHouse Pvt. Ltd. New Delhi.

UNIT IV

- Dietary Guidelines for Indians, (2024). National Institute of Nutrition, Indian Council for Medical Research, Government of India. https://www.nin.res.in/dietaryguidelines/pdfjs/locale/DGI07052024P.pdf
- Vir, Sheila C (2024). Child, Adolescent and Women Nutrition in India: Public Policies, Programmes and Progress. New Delhi: Routledge.
- Vir, Sheila C (2021). Public Health Nutrition in developing Countries Part 1and 2. Woodhead Publishing India Limited
- Bamji MS, Krishnaswamy K and Brahmam GNV (Eds) (2016). Textbook of Human Nutrition, 4th edition. Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi.
- Wadhwa A and Sharma S (2003). Nutrition in the Community-A Textbook. Elite PublishingHouse Pvt. Ltd. New Delhi.

Suggested Readings

- Relevant IEC material from Government of India (including Ministry of Health and Family Welfare, Ministry of Women and Child Development, and other ministries working in nutrition) and Non-Governmental Organizations working in the area of health and nutrition.
- Ministry of Health and Family Welfare (2016). Infant and Young Child Feeding, Training Module for ANMs, Mothers Absolute Affection, National Health Mission, New Delhi.
- Shane A Norris, Edward A Frongillo, Maureen M Black, Yanhui Dong, Caroline Fall, Michelle Lamplet al (2022). Nutrition in adolescent growth and development. The Lancet Vol. 399No. 10320P172-184.
- Dougal Hargreaves, Emily Mates, Purnima Menon, Harold Alderman, Delan Devakumar, Wafai Fawziet al (2022). Strategies and interventions for healthy adolescent growth, nutrition, and development. The Lancet, Vol. 399No. 10320P198-210.
- Victora, Cesar G et al (2021). Revisiting maternal and child undernutrition in low-income and middle-income countries: variable progress towards an unfinished agenda. The Lancet, Volume 397, Issue 10282, 1388 – 1399.
- Heidkamp, Rebecca A et al (2021). Mobilising evidence, data, and resources to achieve global maternal and child undernutrition targets and the Sustainable Development Goals: an agenda for action. The Lancet, Volume 397, Issue 10282, 1400 – 1418.
- Zohra S. Lassi, Rehana A. Salam (2025). Nutrition Across Reproductive, Maternal, Neonatal, Child, and Adolescent Health Care: Focus on Low- and Middle-Income Countries, Springer Nature.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
ANIMAL PRODUCTS PROCESSING AND PRESERVATION

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

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Prerequisites of the Course (if any)
		Lecture	Tutorial	Practical		
Animal Products Processing and Preservation	**4**	**3**	**0**	**1**		**Nil**

Learning Objectives

- To gain in-depth knowledge of processing aspects involved in milk and milk products, meat, fish, poultry, and eggs.
- The course aims to provide knowledge of the principles and preservation of milk and milk products, meat, fish, poultry, eggs, fruits, and vegetables.

Learning Outcomes

The students would be able to:

- Understand the composition and quality standards of milk, plant produce, and animal-based foods.
- Learn essential processing and preservation methods for dairy, fruits–vegetables, and animal products.
- Develop skills in quality testing of milk, eggs, meat, poultry, fish, and processed items.
- Gain knowledge of manufacturing steps and quality aspects of major dairy and animal products.
- Apply hygiene, sanitation, and basic HACCP principles in food processing operations.

THEORY
(Credits 3; Hours 45)

UNIT I: Milk and Milk Products processing **18 Hours**

This unit deals with the introduction, composition, nutritive value, properties, processing, manufacturing and quality aspects of milk and milk products

- **Introduction to market milk:** Indian standards, Composition, factors affecting composition of milk, physicochemical properties of milk and its constituents, Clean milk practices, buying and collection, platform tests.
- **Milk processing:** Pre-heating, filtration, clarification, standardization, bactofugation, homogenization, pasteurization, cooling, packaging and storage.
- **Milk products (Cream, butter, ice cream, curd, cheese, khoa and ghee)-**Introduction, definition, classification, methods of manufacture, quality aspects.

UNIT II: Technology of Meat and Poultry 12 Hours

This unit deals with the composition, nutritive value, classification, pre-slaughter handling, post-mortem changes and preservation of meat and poultry.

- Chemical composition and nutritive value, Types and classification of meat and poultry
- Pre-slaughter handling; ante-mortem and post-mortem inspection; methods of stunning, slaughter, and dressing.
- Post-mortem muscle changes—rigor mortis, factors affecting rigor, thaw rigor, and cold shortening, ageing, curing, smoking, tenderizing, and colour changes in meat.
- Hygiene and sanitation practices in slaughterhouses
- Major preservation methods: chilling, freezing, curing, smoking, dehydration, canning, and irradiation, antibiotic residue concerns, concept of value addition and by-product utilization

UNIT III: Fish processing and products 6 Hours

This unit deals with the composition, nutritive value, post-harvest changes, spoilage, processing, preservation and utilisation of fish and its products.

- Composition, nutritive value and on-board handling of fish, Post-harvest physiology and spoilage of fish.
- Preservation techniques: Chilling, freezing (IQF, block freezing), curing, drying, smoking, canning, irradiation, Modified Atmosphere Packaging and quality factors.
- Fish processing and value-added products: Surimi, fish mince, fish protein concentrates. Utilization of fish processing by-products.

UNIT IV: Egg processing and products 9 Hours

This unit deals with the composition, nutritive value, functional properties, quality aspects, processing of fish and its products.

- Nutritive value and functional properties of eggs
- Egg grading and quality standards, quality factors, and storage
- Bacterial infection, pasteurization, freezing, drying, and egg substitutes.
- Processing of egg products: Egg powders, frozen eggs, liquid eggs. Technology of egg foams and factors influencing foaming characteristics.

PRACTICAL
(Credits 1; Hours 30)

List of Experiments

- Determination of Acidity in milk and milk products.
- Platform tests for milk quality: (COB, MBRT, Specific gravity, SNF)
- Estimation of milk fat by the Gerber method.
- Assessment of common adulterants in milk and milk products.
- Preparation and Quality Evaluation of Chicken Sausage.
- Planning of generic HACCP model for poultry.
- Quality evaluation of fish (Fresh vs Stale).
- Detection of meat in Vegan foods

- Cut out analysis of canned fish (Sardine/Mackerel/Tuna) and analysis of external and internal parameters.
- Evaluation of eggs for quality parameters (market eggs, branded eggs)

Essential Readings/ Suggested Readings

UNIT I

- De, S. (2007).Outlines of Dairy Technology.Oxford: Oxford University Press.
- Webb B.H.and Alford (2005). Fundamentals of dairy chemistry. CBS Publisher.
- Potter, N. N., & Hotchkiss, J. H. (2012). Food science. Springer Science & Business Media.
- Srilakshmi, B.(2002). Food science. New Age Publishers
- https://www.scribd.com/document/659871719/Manual-Dairy-03-10-2022

UNIT II

- Hui, Y.H. 2001. Meat Science and Applications. Marcel Dekker.
- Pearson, A.M. & Gillett, T.A. 1996. Processed Meats. 3rd Ed. Chapman & Hall.
- Lawrie, R.A. 2006. Lawrie's Meat Science. 7th Ed. Woodhead Publishing.
- Potter, N. N., & Hotchkiss, J. H. (2012). Food science. Springer Science & Business Media.
- Srilakshmi, B.(2002). Food science. New Age Publishers
- Van Loesecke HW (1998) *Food Technology Series Drying and Dehydration of foods*. Allie Scientific Publishers

UNIT III

- Govindan, T.K. 1985. Fish Processing Technology. Oxford & IBH.
- Sen, D.P. (2005). Advances in Fish Processing Technology. Allied Publishers Pvt.Limited.
- Hall, G.M. (1997). Fish Processing Technology. 2nd edition NY: VCH
- ElShehawy, S. M., & Farag, Z. S. (2019). Safety assessment of some imported canned fish using chemical, microbiological and sensory methods. *Egyptian Journal of Aquatic Research, 45*(4), 389–394.
- Pais-Costa, A. J., Marques, J. C., & Prego, R. (2025). New perspectives on canned fish quality and safety. *Foods*, 14(1), 99
- Potter, N. N., & Hotchkiss, J. H. (2012). Food science. Springer Science & Business Media.
- Srilakshmi, B.(2002). Food science. New Age Publishers

UNIT IV

- Stadelman, W.J. and Cotterill, O.J. 2001. Egg Science and Technology. Haworth Press.
- Potter, N. N., & Hotchkiss, J. H. (2012). Food science. Springer Science & Business Media.
- Srilakshmi, B.(2002). Food science. New Age Publishers

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
UNIT OPERATIONS IN FOOD PROCESSING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Unit Operations in Food Processing	4	2	0	2		Nil

Learning Objectives

- To impart knowledge about various UNIT operations used in food processing
- To understand the efficiency and suitability of equipment for specific UNIT operations
- To understand the concept of hygienic design, sustainability, and Industry 4.0 elements in process planning

Learning Outcomes

The students would be able to:

- analyse and differentiate various UNIT operations used in food processing
- evaluate the efficiency and suitability of equipment for specific UNIT operations
- apply hygienic design, sustainability, and Industry 4.0 elements in process planning

THEORY
(Credits 2; Hours 30)

UNIT I: Introduction to Unit Operations **2 Hours**

This unit deals with the introduction and classification of UNIT operations in food processing.

- Definition of UNIT operations,
- Classification of UNIT operations:
  - Preliminary operations (cleaning of raw material, sorting, grading)
  - Conversion operations (size reduction, mixing, filtration, centrifugation, etc.)
  - Preservation operations (heat processing, evaporation, freezing, irradiation, etc.)
  - Ancillary operations (plant hygiene, water supplies, material handling, etc.)

UNIT II: Preliminary Operations **4 Hours**

This unit deals with the cleaning, sorting, grading and peeling of food in industry.

- Cleaning: theory, methods of cleaning – wet and dry and applications
- Sorting and grading: theory, methods (shape and size, weight, color and machine vision sorting and grading systems) and applications, recent developments.
- Peeling: theory, methods and applications

UNIT III: Conversion Operations **12 Hours**

This unit deals with the operations like size reduction, mixing , centrifugation, expression, extraction, filtration and membrane separation.

- Size reduction: Theory, Principles of size reduction- energy laws; Equipment of size reduction in solid and liquid food- mechanism and working principle, Effect on foods and microorganism, Developments in size reduction technologies.
- Mixing: Theory, Equipment of mixing in – dry powders, low or medium viscosity liquids, high viscosity liquids and pastes, dispersion of powders in liquids, Effect on foods and microorganism, Developments in mixing technologies.
- Centrifugation: Theory, Equipment for- separation of immiscible liquids, clarification of liquids by removal of small amounts of solids, removal of solids.
- Expression and Extraction: Theory and Equipment
- Filtration and Membrane Separation: Theory, types, membrane fouling, Equipment, applications in food processing.

UNIT IV: Automation, Sustainability and Hygienic Design in UNIT Operations 12 Hours

This unit deals with recent advancements in food processing UNIT operations with emphasis on automation, sustainability and hygienic design

- Food plant design
- Automation in processing lines and equipment control; introduction to PLC, sensors and machine vision in selected UNIT operations (sorting, grading, mixing, membrane processing).
- Industry 4.0 applications: data-driven process monitoring, predictive maintenance and traceability.
- Sustainability considerations in equipment and process selection: energy efficiency, water use reduction and waste minimization strategies.
- Hygienic design principles: sanitary materials of construction, equipment cleanability and advances in CIP/SIP systems.

PRACTICAL
(Credits 2; Hours 60)

- Sorting and grading of food material (grains, spices, fruits and vegetables)
- Screen analysis of food sample
- Freezing time calculation
- Mixing index calculation using solid-solid and liquid-liquid systems
- Estimation of filtration rate
- Study of ultra-filtration process.
- Food plant design
- Study on material handling in food processing industry
- Industrial Visit

Essential Readings/ Suggested Readings

UNIT I

- Fellows, P. J. (2017). Food Processing Technology: Principles and Practice (4th ed.). Woodhead Publishing.
- Barbosa-Cánovas, G. V., Balasubramaniam, V. M., Chorng-Li, T., Pothakamury, U. R., & Swanson, B. G. (2001). Non thermal Processing of Foods. IFT Press/Marcel Dekker.

- Singh, R. P., & Heldman, D. R. (2014). Introduction to Food Engineering (5th ed.). Academic Press.
- Ibarz, A., & Barbosa-Cánovas, G. V. (2014). UNIT Operations in Food Engineering. CRC Press.

UNIT II

- Barbosa-Cánovas, G. V., Balasubramaniam, V. M., Chorng-Li, T., Pothakamury, U. R., & Swanson, B. G. (2001). Non thermal Processing of Foods. IFT Press/Marcel Dekker.
- Fellows, P. J. (2017). Food Processing Technology: Principles and Practice (4th ed.). Woodhead Publishing.
- Ibarz, A., & Barbosa-Cánovas, G. V. (2014). UNIT Operations in Food Engineering. CRC Press.

UNIT III

- Heldman, D. R., & Lund, D. B. (2007). Handbook of Food Engineering (2nd ed.). CRC Press.
- Fellows, P. J. (2017). Food Processing Technology: Principles and Practice (4th ed.). Woodhead Publishing.

UNIT IV

- Sun, D. W. (Ed.). (2016). Emerging Technologies for Food Processing (2nd ed.). Academic Press.
- Singh, R. P., & Heldman, D. R. (2014). Introduction to Food Engineering (5th ed.). Academic Press.

Suggested Readings

- R. Paul Singh and Dennis R. Heldman. 2014. Introduction to Food Engineering, 5th Ed. Elsevier, Amsterdam, The Netherlands.
- Christie John Geankoplis. 2003. Transport Processes and Separation Process Principles (Includes UNIT Operations), 4th Ed. Prentice-Hall, NY, USA.
- Warren L. McCabe, Julian Smith, Peter Harriott. 2004. UNIT Operations of Chemical Engineering, 7th Ed. McGraw-Hill, Inc., NY, USA.
- Toledo R T, 2018. Fundamentals Of Food Process Engineering, Springer, Fourth Edition ISBN: 9783319900971
- Fritz, M., & E. Hertel (2020). "Sustainability and Digitalization in the Food Industry." Journal of Food Engineering Trends.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

EXERCISE, NUTRITION AND METABOLISM

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Exercise, Nutrition and Metabolism	4	3	0	1		Nil

Learning Objectives

- To familiarize students with the concepts of metabolism, energy expenditure and periodisation for fitness and sports
- To enable students to imbibe knowledge and methods for planning daily diets; nutrient intake strategies and hydration for fitness and various types of sports

Learning Outcomes

- The students would be able to understand the role of different nutrients in sports performance and health of a competitive or recreational athlete.
- Students will be able to plan daily diets; nutrient intake strategies and hydration regimens for various types of sports

THEORY
(Credits 3; Hours 45)

UNIT I: Energy and Macronutrient intake for physical fitness and periodised sports training **15 Hours**

This unit focusses on Energy metabolism and macronutrients for physical fitness and sports performance

- **Exercise Energy expenditure:** Concept of metabolism; periodisation in sports; energy systems and energy availability for assessment of energy requirement of athletes and consequences of energy imbalance on performance; commonly reported energy intake patterns of athletes.
- **Carbohydrate Intake and performance:** Carbohydrate and its utilisation in the body; intensity of training impacting carbohydrate utilisation; recommendations of type, timing and quantity of carbohydrate intake in resistance training and endurance training

- **Fat Intake and performance:** Intensity of training impacting fat utilization; recommendations of type, timing and quantity of fat intake in resistance training and endurance training.
- **Protein Intake and performance:** Type and quality of protein and its utilisation in the body; protein turnover and recommendations for protein during endurance versus resistance training; specific role of amino acids for performance; dietary protein strategies for performance enhancement

UNIT II: Micronutrients in exercise performance **15 Hours**

This unit focusses on Energy metabolism and macronutrients for physical fitness and sports performance

- **Vitamins:** Intake of vitamins in exercise performance: through mental ability, immunity and recuperation to an injury; performance benefits of key vitamins; requirements for athletes.
- **Minerals:** Mineral intake and exercise performance: mental ability, immunity and recuperation to an injury; performance benefits of key minerals; requirements for athletes.
- **Antioxidants:** Definition of oxidative stress in exercise and sports; antioxidants; enzymatic and non-enzymatic antioxidants; mode of action; antioxidant effects in reducing exercise related oxidative stress; effect on muscle contraction and exercise performance; antioxidant deficiencies and exercise performance; antioxidant requirements for exercise.

UNIT III: Hydration strategies for athletes **5 Hours**

This unit focuses on dehydration and strategies for hydration for athletes

- **Dehydration:** Causes; symptoms and its effects on cardiovascular system and muscle metabolism; tolerable levels of dehydration; synergistic effect of dehydration and hyperthermia; effects of dehydration on endurance performance; methods for determining degree of dehydration among athletes; strategies for lowering hyperthermia.
- **Hydration strategies:** Beverage composition and formulation (isotonic, hypotonic and hypertonic); only fluid versus fuelling with other macronutrients and electrolytes for exercise benefits; beverage volume for maintaining euhydration with performance benefits; beverage timing (pre-exercise hydration, during exercise hydration protocol, post-exercise rehydration); factors that influence intake; gastric emptying and absorption of fluids; beverage palatability and fluid intake; intravenous rehydration; food versus fluid consumption during exercise.

UNIT IV: Nutrient periodisation and meal timing for sports **10 Hours**

This unit will strengthen concepts and application of nutrient periodisation, meal timing related to the type of training and exercise of all types, with special focus on endurance events

- **Nutrient periodisation and Meal timing:** Concept and importance of periodisation and meal timing related to the type of training and exercise intensity.
- Effect of energy intake and co-ingestion of carbohydrate and protein before, during and after training.

- Importance of timing of carbohydrate intake; type of carbohydrates and proteins beneficial for maximum refuelling post exercise sessions.
- Gender differences in carbohydrate, protein and fat refuelling strategies.
- Effect of high or low carbohydrate, protein and fat on training adaptation and performance; periodisation of macronutrients based on the phase/season of training and strategies to be followed.

PRACTICAL

(Credits 1; Hours 30)

1. To calculate exercise energy expenditure using the factorial method with activity records and energy cost of sports from the compendium for athletes.
2. Menu planning for food and fluid intake (incorporating traditional Indian food ingredients) for training of:
    - Endurance games
    - Power games in different weight categories
    - Team sports
    - Skilled sports
3. Menu planning for athletes for the following:
    - Pre-competition meal
    - Consumption during-competition
    - Post-competition recovery meal
4. Formulation of sports drinks using traditional Indian food ingredients:
    - Isotonic beverages
    - Hypotonic / hypertonic beverages

Essential Readings

UNIT I

- Burke, L., Minehan, M., and Deakin, V. (Eds.). (2021). Clinical Sports Nutrition (Vol.6) McGraw-Hill Education , Australia. ISBN-13:978-1760425647
- Campbell, B. (Ed.). (2013). Sports nutrition: enhancing athletic performance. CRC Press.
- Fink, H. H., & Mikesky, A. E. (2017). Practical applications in sports nutrition. Jones &

  Bartlett Learning.
- The Academy of Nutrition and Dietetics. (2021). *Sports Nutrition for Indians* [PDF]. Available at https://higherlogicdownload.s3.amazonaws.com/THEACADEMY/de8f706f-a2d1-4ee8-8d52-404d56f75b77/UploadedImages/IND/Document/Resources/Sports_Nutrition_for_Indians_2021.pdfILSI- India, NIN, SAI. *Nutrition and hydration Guidelines for excellence in sports performance*; 2007: 48-49.

- Lal P.R. Handbook of Sports Nutrition, Friends' Publications, New Delhi, ISBN-13: 978-8172162818.
- Eberle, S. G. (2013). Endurance Sports Nutrition, 3E. Human Kinetics.

UNIT II

- Wolinsky, I., & Driskell, J. A. (Eds.). (2005). Sports nutrition: vitamins and trace elements.

  CRC Press.
- Maughan, R.J., & Shirreffs, S.M. (Eds.). (2013). Food, Nutrition and Sports Performance III (1st ed.). Routledge. https://doi.org/10.4324
- Fink, H. H., & Mikesky, A. E. (2017). Practical applications in sports nutrition. Jones &

  Bartlett Learning.
- Amawi, A., AlKasasbeh, W., Jaradat, M., Almasri, A., Alobaidi, S., Hammad, A. A., Bishtawi, T., Fataftah, B., Turk, N., Saoud, H. A., Jarrar, A., & Ghazzawi, H. (2024). Athletes' nutritional demands: a narrative review of nutritional requirements. *Frontiers in nutrition*, *10*, 1331854. https://doi.org/10.3389/fnut.2023.1331854

UNIT III

- ILSI- India, NIN, SAI. *Nutrition and hydration Guidelines for excellence in sports performance*; 2007: 48-49.
- Lal P.R. Handbook of Sports Nutrition, Friends' Publications, New Delhi, ISBN-13: 978-8172162818.
- The Academy of Nutrition and Dietetics. (2021). Sports Nutrition for Indians [PDF]. Available at https://higherlogicdownload.s3.amazonaws.com/THEACADEMY/de8f706f-a2d1-4ee8-8d52-404d56f75b77/UploadedImages/IND/Document/Resources/Sports_Nutrition_for_Indians_2021.pdf

UNIT IV

- ILSI- India, NIN, SAI. *Nutrition and hydration Guidelines for excellence in sports performance*; 2007: 48-49.
- Campbell, B. (Ed.). (2013). Sports nutrition: enhancing athletic performance. CRC Press.
- Lal P.R. Handbook of Sports Nutrition, Friends' Publications, New Delhi, ISBN-13: 978-8172162818.
- Eberle, S. G. (2013). Endurance Sports Nutrition, 3E. Human Kinetics.

Suggested Readings

- Marie Dunford. (2017) Nutrition for Sport and Exercise.
- Jeukendrup, A. (2010). Sports Nutrition-From lab to Kitchen. Meyer & Meyer Sport.
- Spano, M., Kruskall, L., & Thomas, D. T. (2017). Nutrition for Sport, Exercise, and Health.
  Human Kinetics.
- Lamprecht, M. (Ed.). (2014). Antioxidants in sport nutrition. CRC Press.
- Valenzuela, P. L. (2023). Recent Advances in Nutrition for Disease Prevention and Sports Performance Enhancement. *Nutrients*, *15*(5), 1170.
- Kloby Nielsen, L. L., Tandrup Lambert, M. N., & Jeppesen, P. B. (2020). The Effect of Ingesting Carbohydrate and Proteins on Athletic Performance: A Systematic Review and

Meta-Analysis of Randomized Controlled Trials. *Nutrients*, *12*(5), 1483. https://doi.org/10.3390/nu12051483

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

DISCIPLINE SPECIFIC ELECTIVE (DSE)

SPORT-SPECIFIC NUTRITION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Sport-specific Nutrition	4	2	0	2		NIL

Learning Objectives

- To understand the concept of basing nutritional intake on physiological demands of training for Specific Sports
- To gain expertise in fuel and nutrient support specific to a sporting event during training, pre-competition, during competition and recovery.

Learning Outcomes

- Students will be able to demonstrate comprehension of the principles of basing nutritional intake on physiological demands of training for Specific Sports
- Students will be able to plan fuel and nutrient support during training, pre-competition, during competition and recovery, specific to a sporting event.

THEORY

(Credits 2; Hours 30)

UNIT I: Nutrition for team sports and Ultra-Endurance events 8 Hours

This unit deals with the concept of adaptation of nutrition guidelines for team games (Hockey, Kabaddi and Cricket) and marathon covering the following aspects:

- Playing position and rules of the game; basic physiology of playing team sports; physique mapping for each event (body composition).

- Determining position wise fuel need for training and competition; quantity and timing of nutrient intake; current research on position-specific nutrition needs and fuel utilisation.

- Current literature suggestions on food intake and recovery strategies; supplement usage and dietary periodisation among the athletes; case studies on team sports and marathon

UNIT II: Nutrition for Power and Weight-Category Sports 8 Hours

This unit deals with the concept of adaptation of nutrition guidelines for specific sports requiring adherence to weight categories

- Strength and Combat sports (Sprits, Jumps, Throws, Wrestling, Weightlifting, Judo, Boxing): Game dynamics; fuel utilisation (energy and macronutrients); energy demands of the game; nutrient timing and dietary periodisation

- Weight management issues: Overemphasis on protein requirements; tailored nutrition and hydration guidelines before, during and post-training/competitions; supplement or other ergogenic aids; recovery strategies (dietary and non-dietary components).

UNIT III: Nutrition for Water Sports 6 Hours

This unit deals with the knowledge of various water-sports and the concept of adaptation of nutrition guidelines for water sports (Swimming, Rowing):

- Understanding of Water Sports
- Physiological and biochemical changes in water sports
- Common nutritional problems associated to water sports
- Guidelines specific to nutrition in water sports: Identifying individual energy and other macronutrient requirements; nutrient-timing; dietary periodisation; supplement usage.

UNIT IV: Nutrition for Nutrition for sports requiring Balance and coordination 8 Hours

This unit deals with the concept of adaptation of nutrition guidelines for balance and coordination related sports:

- **Balance related sports (Gymnastics, Golf):** Understanding playing formats and fuel utilisation (energy and macronutrients); different energy demands of balance sport; physique maintenance and weight management issues; nutrient timing and dietary periodisation; tailored nutrition and hydration guidelines before, during and post- training/competitions
- **Coordination sport (Archery, Shooting):** Playing formats and specific demands of the game; eye-hand coordination; current research relating nutrition and coordination sports performance; maintaining proper fuel and hydration in coordination sport; case studies of archers and shooters; identifying the current nutritional problems; dietary guidelines for pre, during and post- training/competitions

PRACTICAL

(Credits 2; Hours 60)

1. Menu planning for food and fluid intake during training and competition including nutrient periodisation for:
    - Hockey players/cricketers.
    - Kabaddi players
    - Sprinters and runners.
    - Tennis/Badminton.
    - Rowing.
    - Shooting/Archery.
    - Marathon
2. Menu planning for food and fluid intake during training and competition including nutrient periodisation and weight-management for:
    - Power sports.
    - Gymnastics.
3. Analysis of food labels of sports products
4. Nutritional evaluation of sports drink

Essential Readings

UNIT I

- Roberts, J. D., López-Samanes, A., & Trakman, G. (Eds.). (2024). *Nutrition for team and individual sport athletes*. Frontiers Media SA. ISBN 9782832557761.
- Fink, H. H., & Mikesky, A. E. (2017). Practical applications in sports nutrition. Jones & Bartlett Learning.
- Christoph Zinner and Billy Sperlich. (2016). Marathon Running: Physiology, Psychology, Nutrition and Training Aspects
- Ryan, M. (2012). Sports nutrition for endurance athletes. Velo Press.
- Stohs, S. J., & Kitchens, E. K. (Eds.). (2013). *Nutrition and enhanced sports performance: Muscle building, endurance, and strength*. Academic Press. ISBN 9780123964779.

UNIT II

- Jackson, C. G. R. (Ed.). (2000). *Nutrition and the Strength Athlete*. CRC Press. ISBN: 9780849381980.
- Maughan, R. J. (Ed.). (2008). Nutrition in sport (Vol. 7). John Wiley & Sons.
- Slater, G., & Phillips, S. M. (2011). Nutrition guidelines for strength sports: sprinting, weightlifting, throwing events, and bodybuilding. Journal of sports sciences, 29(sup1), S67-S77.
- Stohs, S. J., & Kitchens, E. K. (Eds.). (2013). *Nutrition and enhanced sports performance: Muscle building, endurance, and strength*. Academic Press. ISBN 9780123964779.

UNIT III

- González Andrade, C. (2025). *Nutrition and water polo* (PDF eBook). César González Andrade. Publisher date: February 5, 2025. ISBN 9798230233350.

- FINA. (2021). *Nutrition for aquatic athletes* (PDF booklet). Fédération Internationale de Natation (FINA). Available at https://resources.fina.org/fina/document/2021/02/04/5c14b311-7eba-4d2b-9114-acf13d300683/nutrition_for_aquatic_athletes_booklet_v5_final.pdf

UNIT IV

- Clark, N. (2008). *Sports nutrition guidebook* (4th ed.) [PDF]. Human Kinetics. Available at https://repository.bbg.ac.id/bitstream/1996/1/Sports_Nutrition_Guide.pdf
- Jemni, M. (Ed.). (2018). *The science of gymnastics: Advanced concepts* (2nd ed.). Routledge. ISBN 978-1-138-70192-2.
- Marcolin, G., Matej, S., & Paillard, T. (Eds.). (2022). *Postural balance control in sport and exercise* [PDF]. Frontiers in Physiology. ISBN 978-2-88976-730-4.

Suggested Readings

- Burke, L., Deakin, V., & Minehan, M. (Eds.). (2021). *Clinical sports nutrition* (6th ed.). McGraw-Hill Education.
- Campbell, B. (Ed.). (2013). Sports nutrition: enhancing athletic performance. CRC Press.
- Reaburn, P. R. (Ed.). (2014). Nutrition and Performance in Masters Athletes. CRC Press.
- Powers, S. (2014). Exercise physiology: Theory and application to fitness and performance. McGraw-Hill Higher Education.
- McArdle, W. D., Katch, F. I., & Katch, V. L. (2015). Exercise physiology: nutrition, energy, and human performance. 8th Edition, Lippincott Williams & Wilkins.

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

SEMESTER -II

DISCIPLINE SPECIFIC CORE COURSE

Food Product Development and Quality Evaluation

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Food Product Development and Quality Evaluation	4	**2**	**0**	**2**		NIL

Learning Objectives

- To impart advanced knowledge of food product innovation and systematic quality evaluation
- To ensure understanding of the New Product Development process, prototype creation, sensory/physicochemical analysis, and lifecycle management

Learning Outcomes

Upon successful completion of this course, the student will be able to

- Explain New Product Development concepts and major development stages
- Critically assess product screening, concept testing, and commercialization strategies
- Apply sensory, physicochemical, and regulatory quality evaluation methods
- Interpret feedback, consumer studies, and post-launch improvements

THEORY

(Credits 2; Hours 30)

UNIT I: Concepts and Fundamentals of New Product Development 8 Hours

This unit explores key definitions, objectives, product types, and foundational drivers of innovation in the food industry

- Definitions, scope, importance of NPD in food industry
- Types of new products: line extensions, "me-too" products, novel, functional, and health-oriented foods

- Product innovation drivers: consumer trends, technology, sustainability, regulatory environment
- Overview of global and Indian practices.

UNIT II: Stages and Strategies in Food Product Development 8 Hours

This unit covers the complete new product development process, from ideation to market launch, including reasons for product failure and lifecycle management

- The steps in NPD process: Idea generation, screening, concept development and testing, business analysis, product development, market testing, commercialization
- Integrated R&D and market approaches
- Causes of product failure, Case studies of success and failure.

UNIT III: Physicochemical and sensory evaluation 7 Hours

This unit explores sensory evaluation techniques and instrumental analyses to ensure food product safety, quality, and consumer acceptance through integrated regulatory and shelf-life assessment.

- Sensory methods: descriptive, discrimination
- Application in product development and market validation

UNIT IV: Safety and Shelf Life evaluation 7 Hours

- Instrumental methods, regulatory standards, shelf-life testing
- Product life cycle strategies and consumer feedback

PRACTICAL

(Credits 2; Hours 60)

- Develop a food prototype by selecting ingredients and employing a staged development approach.
- Standardize the recipe and systematically record all process modifications.
- Conduct sensory evaluation and perform physicochemical quality assessments and shelf-life.
- Compile a comprehensive product detailing market positioning and strategies for consumer acceptance.
- Prepare a project report on food product development and quality evaluation

Essential Reading

UNIT I

- Fuller, G. W. (2005). *New food product development* (2nd ed.). CRC Press.
- Moskowitz, H. R., Saguy, I. S., & Straus, T. (2009). *An integrated approach to new food product development*. CRC Press.

UNIT II

- Fuller, Gordon W. (2005). *New Food Product Development*, 2nd Edition, CRC Press, Boca Raton, Florida.

- Moskowitz, H. R., Saguy, I. S., & Straus, T. (2009). *An integrated approach to new food product development*. CRC Press.
- Moskowitz, H. R., Beckley, J. H., & Resurreccion, A. V. A. (2012). *Sensory and consumer research in food product design and development* (2nd ed.). Wiley-Blackwell.
- Stone, H., Bleibaum, R. N., & Thomas, H. A. (2020). *Sensory evaluation practices* (5th ed.). Academic Press.

UNIT III

- Moskowitz, H. R., Beckley, J. H., & Resurreccion, A. V. A. (2012). *Sensory and consumer research in food product design and development* (2nd ed.). Wiley-Blackwell.
- Stone, H., Bleibaum, R. N., & Thomas, H. A. (2020). *Sensory evaluation practices* (5th ed.). Academic Press.

UNIT IV

- Fuller, Gordon W. (2005). *New Food Product Development*, 2nd Edition, CRC Press, Boca Raton, Florida.
- Moskowitz, H. R., Saguy, I. S., & Straus, T. (2009). *An integrated approach to new food product development*. CRC Press.
- Moskowitz, H. R., Beckley, J. H., & Resurreccion, A. V. A. (2012). *Sensory and consumer research in food product design and development* (2nd ed.). Wiley-Blackwell.

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

DISCIPLINE SPECIFIC CORE COURSE

NUTRITION COMMUNICATION AND HEALTH PROMOTION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Nutrition Communication and Health Promotion	**4**	**3**	**0**	**1**		**Nil**

Learning Objectives

- To understand the concept of Dietary Guidelines and their relevance.
- To understand the determinants of food behavior and various models of behaviour change.
- To gain insight about planning, implementing and evaluating behaviour change communication for promotion of nutrition and health among vulnerable groups.
- To get exposure about nutrition advocacy and ethical considerations in nutrition communication.

Learning Outcomes

The students would be able to:

- Learn about the dietary guidelines of various countries and their relevance.
- Describe the inter-relationship between nutrition and health behaviour and apply various models of health behaviour in planning social and behaviour change strategy
- Learn and apply the concept of social and behaviour change communication and explain the principles of ethics in nutrition and health communication.
- Develop an understanding of the concept of nutrition advocacy.

THEORY

(Credits 3; Hours 45)

UNIT I: Dietary guidelines for nutrition and health related concerns 08 Hours

This unit lays thrust on the significance of national and international dietary guidelines in shaping public health strategies, while fostering a critical understanding of their strengths, limitations, and evolving relevance.

- National and international guidelines and their role in nutrition promotion.
- Critical appraisal of the current guidelines.

UNIT II: Nutrition and behaviour inter-relationship 07 Hours

This unit highlights the vital connection between food habits and overall health behaviour, drawing on

established models and theories that explain how individuals make nutrition-related decisions. It further emphasizes a range of intervention strategies aimed at promoting healthy eating, incorporating both ecological approaches and individual-level behaviour change techniques.

- Food and health behaviour, models/ theories of health behaviour, strategies for intervention at the ecological and individual level

UNIT III: Social and Behaviour Change Communication for Nutrition and Health Promotion and ethics in SBCC 22 Hours

This unit deals with the fundamental concepts and objectives of communication for behaviour change, various approaches for nutrition and health promotion such as social mobilization and social marketing, and the planning and implementation of communication strategies aimed at promoting positive social and behavioural outcomes. It also focuses on designing effective training strategies for capacity building of trainers and provides an overview of the evaluation of social and behaviour change communication programmes. This unit also covers the crucial role of ethics in nutrition and health communication, emphasizing the responsibility of professionals to share accurate, respectful, and evidence-based information while navigating key ethical principles and contemporary concerns.

- Concept and objectives of nutrition communication for behaviour change.
- Approaches for nutrition and health promotion: Social Mobilization, Social Marketing, process etc.
- Planning of communication strategies for social and behaviour change programme.
- Designing training strategies for trainers and their capacity building.
- Implementing social and behaviour change communication intervention: an overview.
- Evaluation of social and behaviour change communication programmes.
- Significance of ethics in nutrition and health communication.
- Ethical Principles and concerns

UNIT IV: Nutrition Advocacy 08 Hours

This unit provides a comprehensive understanding of advocacy in the field of nutrition, focusing on its meaning, various types, and the tools and techniques used to influence public policies. It further highlights the vital role of advocacy in nutrition policy formulation and guides learners in the preparation of effective policy briefs.

- Meaning, types, tools and techniques and advocacy planning.
- Role of advocacy in nutrition policy formulation, preparation of policy briefs.

PRACTICAL
(Credits 1; Hours 30)

1. Formulate appropriate key messages to create awareness on feeding/diet related practices based on DGI in a vulnerable population group.
2. Design a suitable communication aid to creating awareness on healthy diet and lifestyle related practices among an identified vulnerable population group and pre-test the same.
3. Prepare one infographic on nutrition related health concern among the identified vulnerable group with in the population.
4. Develop a short tool to assess awareness on healthy food choices among the identified vulnerable group with in the population.
5. Review of communication strategies being used in any one public health nutrition programme in the community.
6. Planning of communication strategies for public health nutrition problems among vulnerable groups in the community -field testing of messages and methods.

Essential Readings

UNIT I

- Dietary Guidelines for Indians, (2024). National Institute of Nutrition, Indian Council for Medical Research, Government of India. https://www.nin.res.in/dietaryguidelines/pdfjs/locale/DGI07052024P.pdf

UNIT II

- Boyle, M. A. (2022). Community Nutrition in Action (8th ed.). Cengage Learning.

UNIT III

- Vir, S.C. (2021). Public Health Nutrition in Developing Countries. Volume-II (2nd ed.) Woodhead Publishing India Pvt Ltd.
- Barth, M. M., Bell, R. A., & Grimmer (Somers), K. (Eds.). (2020). *Public health nutrition: Rural, urban, and global – Community-based practice*. Springer Publishing Company.
- Park, K. (2023). Park's Textbook of Preventive and Social Medicine (27th ed.), Jabalpur, India: Banarasidas Bhanot Publishers.

UNIT IV

- How to: A guide to effective nutrition advocacy (aliveandthrive.org)
- The International Coalition for Advocacy on Nutrition (ICAN) - 1,000 Days (thousanddays.org)

Suggested Readings

- Maibach E. and Parrott R.L. (1995) Designing health messages: Approaches from Communication Theory and Public Health Practice. Sage Publications, Inc.
- USAID. Effective At-Scale Nutrition Social and Behavior Change Communication. Multi-Sectoral Nutrition Strategy 2014-2025 Technical Guidance Brief.
- McNulty J. (2013) Challenges and issues in nutrition education. Rome: Nutrition Education and Consumer Awareness Group, Food and Agriculture Organization of the UNITed Nations. Available at: www.fao.org/ag/humannutrition/nutritioneducation/en/
- USAID (2010) Behavior Change Communication (BCC). Learning Resource Package. Facilitator's Guide.
- O'Sullivan, G.A., Yonkler, J.A., Morgan, W., and Merritt, A.P. (2003) A Field Guide to Designing a Health Communication Strategy, Baltimore, MD: Johns Hopkins Bloomberg School of Public Health/Center for Communication Programs, March 2003.
- Nutrients Requirements for Indians, (2020). A report of the expert group. National Institute of Nutrition, Indian Council for Medical Research, Government of India. https://www.nin.res.in/RDA_Full_Report_2024.html
- Vir, S.C. (2023). Child, Adolescent and Woman Nutrition in India: Public Policies, Programmes and Progress. KW Publishers Pvt. Ltd.

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

DISCIPLINE SPECIFIC ELECTIVE
PRECISION NUTRITION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical/ Practice		
Precision Nutrition	**4**	**3**	**0**	**1**		**Nil**

Learning Objectives:

- To understand the concepts of Precision nutrition, its elements, nutritional indicators and the role of artificial intelligence in Precision nutrition.
- To gain a foundational understanding of **DNA structure**, how **genotypes** translate into **phenotypes,** and how variations such as **mutations, SNPs, and CNVs** influence individual biological differences
- To understand the key molecular biology techniques used to analyze proteins and nucleic acids
- To understand the **composition and diversity of the human gut microbiota** and how the gut microbiota communicates with the brain through the **gut–brain axis**, influencing mood, behavior, and neurological health.

Learning Outcomes:

The students would be able to:

- **Understand the principles of Precision Nutrition** and identify its key components, nutritional biomarkers, and the ways artificial intelligence contributes to personalized dietary recommendations.
- **Describe DNA structure and genetic mechanisms**, and analyse how genotypes translate into phenotypes, including the impact of mutations, SNPs, and CNVs on individual variability in nutritional responses.
- **Apply core molecular biology techniques** such as electrophoresis, PCR-based methods, sequencing, and immunoassays—to investigate proteins, genes, and molecular markers relevant to nutrition and health.
- **Evaluate the diversity and functions of the human gut microbiota** and explain how microbial commUNITies interact with the brain through the gut–brain axis to influencemetabolism, behaviour, and overall health.

THEORY

(Credits 3; Hours 45)

UNIT I: Introduction to Precision Nutrition and Artificial Intelligence (AI) 8 Hours

Students will be introduced about the Precision nutrition, its elements, nutritional indicators and the role of artificial intelligence in Precision nutrition.

- Introduction to Precision Nutrition
- Elements in developing Precision Nutrition
- Nutritional indicators (Anthropometry, clinical, biochemical, diet), biomarkers, physical activity and Precision Nutrition
- Role of AI in Precision Nutrition

UNIT II: Nutrigenomics and Metabolomics 15 Hours

Students will gain a foundational understanding of **DNA structure**, how **genotypes** translate into **phenotypes,** and how variations such as **mutations, SNPs, and CNVs** influence individual biological differences. They will explore **nutrigenomics, metabolomics**, the **epigenome**, and the **exposome** to understand how diet and environmental factors shape gene activity.

- DNA structure, Genotype & Phenotype, Gene variations, Mutations, SNPs, CNVs.
- Nutrigenomics, Metabolomics, Epigenome, Exposome
- Epigenetics and its mechanisms: DNA methylation, Histone modification and non-coding RNA
- The Effect of Micro Nutrients, Macro Nutrients and Bioactive Components on Gene Expression
- Altered Gene expression in Chronic Conditions- Obesity, Type-II diabetes, cardiovascular diseases and cancer.
- Circadian Rhythm, gene expression and Chronobiology
- Metabolomics in understanding relation between diet, metabolism and health
- Tools and Techniques to analyze metabolites from food and metabolic processes-Mass spectrometry and NMR

UNIT III: Molecular techniques in Nutritional genomics and Metabolomics 15 Hours

Students will gain an understanding of key molecular biology techniques used to analyze proteins and nucleic acids. They will learn the principles and applications of **SDS-PAGE, 2D gel electrophoresis,** and **western blotting** for protein separation and identification. They will also understand how **ELISA** is used to detect and quantify specific proteins or antibodies in biological samples.

- Introduction to SDS-PAGE, 2D- gel electrophoresis and western blotting
- Enzyme Linked Immunosorbent Assay (ELISA)
- Polymerase chain reaction (PCR)
- RT-PCR and Real time PCR.

- Introduction to next generation DNA sequencing
- Introduction to Microarray and its applications

UNIT IV: Diet and Gut Microbiota **7 Hours**

Students will develop an understanding of the **composition and diversity of the human gut microbiota**, including the major microbial groups that inhabit the digestive system. They will explore how the gut microbiota communicates with the brain through the **gut–brain axis**, influencing mood, behavior, and neurological health.

- Human Gut Microbiota Composition
- Microbiota and Gut-brain Axis
- Influence of Diet on Gut Microbiota
- Microbiota and its relation with Obesity and other disease conditions (Type II Diabetes, CVDs, IBD, Neurodegenerative diseases)

PRACTICALS

(Credit 1; Hours 30)

1. Evaluation of case studies from the published literature to understand precision nutrition.
2. Assessment of Munich Chronotype questionnaire and Pittsburgh Sleep Quality Index
3. Genomic DNA isolation and its purity check
4. Agarose Gel electrophoresis
5. DNA quantification using Diphenylamine/UV-method
6. RNA Quantification using orcinol/ UV-method
7. Lab visit for demonstration of PCR
8. Interpretation of Genetic tests for various disease conditions.

Essential Readings:

UNIT I

- Kirk, D., Catal, C., & Tekinerdogan, B. (2021). Precision nutrition: A systematic literature review. *Computers in Biology and Medicine*, *133*, 104365.
- Liang, Y., Xiao, R., Huang, F., Lin, Q., Guo, J., Zeng, W., & Dong, J. (2024). AI nutritionist: Intelligent software as the next generation pioneer of precision nutrition. *Computers in biology and medicine*, *178*, 108711.

UNIT II

- Simopoulos, A. P., & Ordovás, J. M. (Eds.). (2004). *Nutrigenetics and nutrigenomics* (Vol. 93). Karger Medical and Scientific Publishers.
- Carlberg, C., Ulven, S. M., & Molnár, F. (2016). *Nutrigenomics*. Berlin, Germany: Springer.
- Paro, R., Grossniklaus, U., Santoro, R., & Wutz, A. (2021). *Introduction to Epigenetics*. Springer Nature.
- Singh, V., Mani, I. (2023). *Epigenetics in Health and Disease*. Academic Press.

UNIT III

- Kumar, P. (2016). *Tools and Techniques of Biophysics and Molecular Biology.* Pathfinder Publication.

- Wilson, K., Hofmann, A., Walker, J. M., & Clokie, S. (Eds.). (2018). *Wilson and Walker's principles and techniques of biochemistry and molecular biology*. Cambridge university press.

UNIT IV

- Ramos, S., & Martín, M. Á. (2021). Impact of diet on gut microbiota. *Current Opinion in Food Science*, *37*, 83-90.

Suggested Readings:

1. de Toro-Martín, J., Arsenault, B. J., Després, J. P., & Vohl, M. C. (2017). Precision nutrition: a review of personalized nutritional approaches for the prevention and management of metabolic syndrome. *Nutrients*, *9*(8), 913.
2. Wang, D. D., & Hu, F. B. (2018). Precision nutrition for prevention and management of type 2 diabetes. *The lancet Diabetes & endocrinology*, *6*(5), 416-426.
3. Voruganti, V. S. (2022). Precision nutrition: recent advances in obesity. *Physiology*.
4. Liang, Y., Xiao, R., Huang, F., Lin, Q., Guo, J., Zeng, W., & Dong, J. (2024). AI nutritionist: Intelligent software as the next generation pioneer of precision nutrition. *Computers in biology and medicine*, *178*, 108711.
5. Ferreira, D. D., Ferreira, L. G., Amorim, K. A., Delfino, D. C. T., & Ferreira, A. C. B. H. (2025). Assessing the Links Between Artificial Intelligence and Precision Nutrition. *Current Nutrition Reports*, *14*(1), 1-17.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

CHALLENGES IN CLINICAL NUTRITION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Challenges in Clinical Nutrition	4	2	0	2		Nil

Learning Objectives

- To understand the process of diet counselling in nutrition care process.
- To understand the nutrition related challenges faced by specific groups like elderly and paediatric population.
- To understand the nutritional management of cancer patients
- To understand the latest technologies which can aid in nutrition care

Learning Outcomes

Student will be able to:

- Use the principles of dietary counselling in various diseases.
- Acquire an in depth understanding about clinical nutrition challenges faced by elderly and children
- Plan diets for cancer patients undergoing different types of therapy
- Acquire skills to use latest technologies in the nutrition care process

THEORY

(Credits 2; Hours 30)

UNIT I: Diet Counselling **4 Hours**

Students will be introduced to the concept of nutrition counselling, Behaviour Change Communication models and strategies for counselling

- Concept and importance of counselling in the nutrition care process
- Understanding dietary patterns and food choices and their impact on counselling
- Behaviour Change Communication and Models for behaviour change
- Counselling strategies

UNIT II: Geriatric and Paediatric Nutrition **16 Hours**

Students will be introduced to the concept of geriatric and paediatric nutrition, common clinical nutrition related problems faced by elderly and children, and strategies for nutritional management.

- Definition of ageing, geriatric and paediatric nutrition, physiological and biochemical changes impacting nutrition among elderly and children
- Assessment of nutritional status of older adults and children in clinical/hospital setting
- Major nutritional and health problems during old age including drug nutrient interactions for selected health conditions:
  Musculoskeletal: osteoporosis, sarcopenia, arthritis and frailty.
  Neurological and cognitive: Mild Cognitive Impairment, Alzheimer's disease, Vascular and Lewy Body Dementia, Parkinson's disease, depression
  Metabolic: obesity, malnutrition, constipation, dehydration, diabetes, hypertension and cardiovascular diseases
- Nutritional management of Inborn Errors of Metabolism in infants and children - phenylketonuria, maple syrup urine disease, galactosemia, congenital hypothyroidism, congenital adrenal hyperplasia
- Epilepsy in children – special diets for management (Ketogenic diet, Atkins diet)
- Nutritional challenges in developmental disabilities in children- autism spectrum disorders, cerebral palsy, attention deficit hyperactivity disorder
- Paediatric diabetes: Type 1 DM – management and impact on growth and management
- Nephrotic syndrome and CKD in children - Impact on growth and management

UNIT III: Nutrition and Cancer **6 Hours**

Students will be introduced to the concept of onco-nutrition and nutritional management of cancer patients.

- Carcinogenesis and Mutagenesis- Diet-Cancer relationship
- Nutrition care process for cancer patients– nutrition, screening and assessment, goals of nutrition care and intervention
- Nutritional implications of cancer therapy – chemotherapy, radiation, biotherapy, hormone, immunotherapy.
- Role of food in cancer prevention– fibre, antioxidants, phytochemicals

UNIT IV: New technology in nutrition practice **4 Hours**

Students will be introduced to the newer concepts in nutrition like AI in nutrition, Chrono and nano nutrition, diet and mental health and smart health technologies.

- Applications of Artificial Intelligence in nutrition and dietetics and AI sources related to nutrition
- Microbiome and nutrition, chrono nutrition and nano nutrition
- Diet and mental health
- Application of smart health care digital devices in clinical nutrition service

PRACTICAL
(Credits 2; Hours 60)

Planning and preparation of diets and dietary counselling for following diseases

1. Osteoporosis
2. Sarcopenia
3. Alzheimer's Disease
4. Inborn errors (any one)

5. Tube feed for cancer patient
6. Epilepsy
7. Neurodevelopmental disorder (ADHD/Autism/cerebral palsy)
8. Paediatric Kidney disease
9. Type I diabetes (Paediatric)
10. Depression

Essential Readings

UNIT I
Students will be introduced to the concept of nutrition counselling, Behaviour Change Communication models and strategies for counselling

- Narula Uma. Communication Models (2023); Atlantic Publishers and Distributors (P) Ltd ISBN 8126906766
- Mahan, L.K. and Escott-Stump, S. (2021): Krause's Food Nutrition and Nutrition Care Process, 16th Edition, Elsevier Pvt. Ltd. ISBN 032381025X
- Snetselaar L. (2009). Nutrition Counseling Skills for the Nutrition Care Process. Fourth Ed. Sudbury, Massachusetts: Jones Bartlett Publishers. ISBN-13: 978-0-7637-2960-8
- Holli B Betsy and Beto A Judith. (2014). Nutrition Counseling and Education Skills for Dietetics Professionals. Sixth edition. USA: Lippincot Williams and Wilkins; Wolters Kluwer. ISBN-10: 1451120389

UNIT II
Students will be introduced to the concept of geriatric and paediatric nutrition, common clinical nutrition related problems faced by elderly and children, and strategies for nutritional management.

- Indian Dietetics Association, (2018) Clinical Dietetics Manual, 2nd Edition. Elite Publishing House Pvt. Ltd.
- Khanna K, Gupta S, Seth R, Passi SJ, Seth R, Mahna R, Puri S (2013). Textbook of Nutrition and Dietetics.2nd Edn. Phoenix Publishing House Pvt. Ltd.
- Raymond, J.L. and Morrow, K. (2020) Krause and Mahan's Food & the Nutrition Care Process. 15th ed. Saunders-Elsevier
- Seth, V. and Singh K. (eds.) (2024) Principles of Medical Nutrition Therapy for Positive Clinical Outcomes, 2nd Edition. Elite Publishing House Pvt. Ltd.
- Mehta, P and Chouhan, K (2016) Ageing, Nutrition and Health. Kalpaz Publication
- Goday, P.S and Walia, C (Eds) (2022) Paediatric Nutrition for Dietitians. Taylor & Francis Ltd. CRC Press
- ESPEN guideline on clinical nutrition and hydration in geriatrics. DOI link: https://doi.org/10.1016/j.clnu.2018.05.024
- ESPEN guideline clinical nutrition in neurology. DOI: 10.1016/j.clnu.2017.09.003

UNIT III
Students will be introduced to the concept of onco-nutrition and nutritional management of cancer patients.

- Raymond, J.L. and Morrow, K. (2020) Krause and Mahan's Food & the Nutrition Care Process. 15th ed. Saunders-Elsevier
- Seth, V. and Singh K. (eds.) (2024) Principles of Medical Nutrition Therapy for Positive Clinical Outcomes, 2nd Edition. Elite Publishing House Pvt. Ltd.
- Shivshankar, T. (2025) Onco-nutrition: Bridging Cancer Care and Nutritional Science Publisher: Sundaram Digital Publication House. ISBN: 9788196975562
- Narimatsu, H., & Yaguchi, Y. T. (2022). The Role of Diet and Nutrition in Cancer: Prevention, Treatment, and Survival. *Nutrients*, *14*(16), 3329. https://doi.org/10.3390/nu14163329

UNIT IV

Students will be introduced to the newer concepts in nutrition like AI in nutrition, Chrono and nano nutrition, diet and mental health and smart health technologies.

- de Oliveira Melo, N. C., Cuevas-Sierra, A., Souto, V. F., & Martínez, J. A. (2024). Biological Rhythms, Chrono-Nutrition, and Gut Microbiota: Epigenomics Insights for Precision Nutrition and Metabolic Health. *Biomolecules*, *14*(5), 559. https://doi.org/10.3390/biom14050559
- Grajek, M., Krupa-Kotara, K., Białek-Dratwa, A., Sobczyk, K., Grot, M., Kowalski, O., & Staśkiewicz, W. (2022). Nutrition and mental health: A review of current knowledge about the impact of diet on mental health. *Frontiers in nutrition*, *9*, 943998. https://doi.org/10.3389/fnut.2022.943998

Suggested Readings

- Chowdhary S.R and Aeri B.T. (2023) Textbook of Food Science and Nutrition. Aarahan Publishers. ISBN:978-93-87270-08-4 https://amzn.eu/d/blLz8S8
- Gibney MJ, Elia M, Ljungqvist &Dowsett J. (2005) Clinical Nutrition. The Nutrition Society Textbook Series. Blackwell Publishing Company
- ICMR (2020) Estimated Average Requirements and Recommended Dietary Allowances for Indians. Published by National Institute of Nutrition, Hyderabad.
- Joshi Y K.(2008) Basics of Clinical Nutrition 2nd ed. Jaypee Brothers Medical Publishers
- Longvah T, Ananthan R, Bhaskarachary K and Venkaiah K (2017). Indian Food Composition Tables. National Institute of Nutrition, ICMR, Hyderabad.
- Puri S, Bhagat A, Aeri, BT, Sharma A (2019). Food Exchange List: A Tool for meal Planning. Elite Publishing House. New Delhi.
- Shils, M.E., Shike, M, Ross, A.C., Caballero B and Cousins RJ (2005) Modern Nutrition in Health and Disease. 10th ed. Lipincott, William and Wilkins.
- Siddhu A, Bhatia N, Singh K, Gupta S (2017). Compilation of food exchange list, technical series 6, Lady Irwin College, University of Delhi. Publ. Global Books Organisation, Delhi
- Williams, S.R. (2001) Basic Nutrition and Diet Therapy. 11th ed. Times Mirror Mosby College Publishing
- Racz B., Duskova M., Starka L., Hainer V., Kunesova M. Links between the circadian rhythm, obesity and the microbiome. Physiol. Res. 2018;67:S409–S420.
- https://www.cancer.gov/about-cancer/treatment/side-effects/nutrition

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
NUTRITIONAL CARE OF THE ELDERLY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Nutritional Care of the Elderly	4	3	0	1		Nil

Learning Objectives

- To acquire knowledge about the physiological, metabolic, and psychosocial changes associated with aging and their impact on nutritional status in the elderly population.
- To comprehend the macro- and micronutrient requirements, dietary recommendations, and nutritional guidelines for older adults.
- To identify and assess common nutrition-related health conditions, risks and drug nutrient interactions among elderly.
- To apply standardized nutritional assessment tools, dietary planning methods, and communication strategies for effective nutrition management.

Learning Outcomes

The students would be able to:

- Discuss the biological, sociocultural, and behavioural dimensions influencing elderly nutrition.
- Assess and interpret the nutritional status and risks among aged individuals using appropriate assessment tools.
- Formulate and justify evidence-based dietary plans and nutrition interventions suitable for elderly health conditions.
- Communicate and counsel using appropriate IEC material for families and caregivers.

THEORY
(Credits 3; Hours 45)

UNIT I: Introduction to Aging and Nutrition — 12 Hours

This unit highlights the concept of aging process, age related physiological changes, nutrition associated health issues, socio cultural factors and challenges of elderly care.

- Process of aging, physiological changes and functional decline
- Nutrition-related health issues such as undernutrition, obesity, sarcopenia, osteoporosis, and anemia

- Interplay between nutrition and chronic diseases (diabetes, cardiovascular diseases, dementia), association between nutritional deficiencies, functional decline and frailty among elderly
- Socio-cultural factors influencing elderly nutrition
- Demographic trends and challenges of elderly care in India
- National Policy on Older Persons (NPOP) and National Programme for Health Care of Elderly (NPHCE)

UNIT II: Nutritional Requirements and Nutritional Assessment of the Elderly 12 Hours

This unit highlights specific nutrient needs of the elderly, nutritional assessment and life style modification for healthy aging.

- Macro- and micronutrient needs specific to elderly individuals
- Changes in energy metabolism and hydration needs in old age
- Use of standardized nutritional assessment techniques (MNA, GNRI, CGA)
- Utilizing interpretation and assessment outcomes to guide intervention planning
- Nutrition guidance and lifestyle modification for healthy aging

UNIT III: Dietary Recommendations and Nutritional Management for Various Health Conditions 17 Hours

This unit focuses on Indian dietary guidelines for elderly, appropriate diets and drug nutrient interactions

- Indian dietary guidelines for elderly and dietary recommendations
- Balanced, culturally appropriate diets for elderly with varying health conditions
  - Gastrointestinal disorders – Flatulence, Constipation, GERD, Diarrhoea
  - Weight Imbalances – Obesity, Underweight
  - Hypertension, Dyslipidemias, Diabetes Mellitus
  - Osteoporosis, Arthritis
  - Neurological disorders: Dementia, Parkinsons Disease, Alzheimer's Disease
- Nutrient and drug Interactions, role of functional foods in aging, Use of nutraceuticals and supplements

UNIT 1V: Communication strategies for effective Counselling to promote healthy aging 4 Hours

This unit focuses on the communication strategies to address the age related nutrition needs, chronic disease conditions and promotion of healthy life style for healthy aging

- Educational and counseling strategies using appropriate IEC materials addressing multiple chronic disease conditions in elderly
- Addressing barriers and enablers for healthy eating specific to elderly

PRACTICAL
(Credits 1; Hours 30)

1. Dietary intake assessment using 24-hour recall and food frequency questionnaires, adaptations of assessment tools to address short term memory loss among elderly
2. Demonstration of measuring anthropometric parameters relevant to elderly nutrition (BMI, mid-upper arm circumference, proxy measurements for height).

3. Diet planning for elderly with diabetes, hypertension, osteoporosis, and digestive disorders.
4. Planning and preparation of specialized therapeutic recipes (soft diet, high-protein snacks, low sodium meals)
5. Planning of Cyclic Menu for residential institutions for elderly accommodating regional preferences and medical conditions.
6. Designing culturally appropriate nutrition education materials.
7. Field visit or virtual tours to community or government elderly nutrition programs and evaluation of existing nutrition interventions for elderly.

Essential Readings

UNIT I

- Agarwal, E., Miller, M., Yaxley, A., & Isenring, E. (2024). Malnutrition in the elderly: A narrative review. *Maturitas*, 128, 1-12.
- National Policy on Older Persons (NPOP) and National Programme for Health Care of Elderly (NPHCE) Document, Government of India

UNIT II

- Barry M., &Murphy, R. (2025). *Geriatric Nutrition: Comprehensive Guide for Clinical Practice (2nd ed.).* Springer.
- Kaiser, M. J., Bauer, J. M., & Schroll, M. (2025). Assessment tools for nutritional status in older persons: MNA and beyond. *Clinical Nutrition*, 44(1), 19-28
- Keller, H. H., & Goy, R. (2023). *Nutrition and Aging: Assessment and Treatment of Nutrition-Related Health Problems*. CRC Press.
- Raymond, J. L., & Mahan, L. K. (Eds.). (2024). *Krause and Mahan's Food and the Nutrition care process (19th ed.*). Elsevier.

UNIT III

- Brownie, S., & Houweling, T. A. J. (2024). Nutritional interventions for sarcopenia in older adults: A systematic review. *Journal of Nutrition, Health & Aging,* 28(4), 402–412
- Dietary Guidelines for Indians (2024) *Dietary Guidelines for Indians: A manual*., NIN
- McIntosh, S. N. (2021). *Williams' Basic Nutrition and Diet Therapy (16th ed.).* Elsevier.
- Tucker, K. L., Duggan, C. P., Jensen, G. L., & Peterson, K. E. (Eds.). (2024). *Modern Nutrition in Health and Disease (12th ed.*). Jones & Bartlett Learning.

UNIT IV

- Miller A, Steinle N (2020) Barriers to Healthy Eating in the Elderly; A National and Global Perspective. J Hum Nutr Food Sci 8(1): 1130.
- Mohan, S., & Singh, A. (2024). Behavior change communication strategies in elderly nutrition programs: Evidence from India. *Nutrition and Health*, 30(2), 123–134.

Suggested Reading

- Gosh, S., & Reddy, V. (2023). Nutritional challenges and solutions in India's aging population. *Indian Journal of Public Health*, 67(2), 115–121.
- IFCT (2017) *Indian Food Composition Tables*, NIN
- Longvah, T., Ananthan, R., Bhaskarachary, K. and Venkaiah, K. (2017). Indian Food Composition Tables. National Institute of Nutrition, ICMR, Hyderabad.
- World Health Organization. (2024). *Integrated care for older people: Guidelines on comm*unity-*level interventions to manage declines in intrinsic capacity* (WHO/NMH/NMA/20.4). World Health Organization.
- Yen, C., & Lin, S. (2024). Nutrition and chronic disease prevention in the elderly: Current perspectives. *Frontiers in Nutrition*, 11, Article 785632.

- Zeng, Y., & Xiao, S. (2025). Advances in nutritional pharmacology relevant to aging populations. In S. R. Murphy & J. T. Lee (Eds.), *Pharmacology and Nutrition in Aging* (pp. 115-143). Elsevier.
- The Encyclopedia of Ageing. 4th Edition Vol I and Vol II Editor Chief- Richard Schulz. Assoc Editors- Linda Noelker, Kenneth Rockwood, Richard Sprott. 2006. Springer Publishing Company. New York.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
PROGRAMME PLANNING IN PUBLIC HEALTH NUTRITION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Programme Planning in Public Health Nutrition	**4**	**2**	**0**	**2**		**Nil**

Learning Objectives

- To understand the planning and management of public health nutrition programmes.
- To gain insight into the process of programme monitoring and evaluation.
- To understand the concept of nutritional surveillance.
- To get exposure to the key components of nutrition in emergency and disaster situations.

Learning Outcomes

The students would be able to:

- Become familiar with the process of planning and management of public health nutrition programmes.
- Apply monitoring and evaluation concepts in public health nutrition programmes and interpret programme indicators.
- Describe nutritional surveillance systems, including their purpose, components, and role in public health decision-making.
- Identify nutrition-related challenges during emergencies/disasters and recommend strategies to tackle them.
- Acquire skills in conducting situational analysis/needs assessment, developing action plans for public health nutrition programmes, and their evaluation.

THEORY
(Credits 2; Hours 30)

UNIT I: Planning Public Health Nutrition Programmes **14 Hours**

This unit deals with the process involved in planning public health nutrition programmes. It emphasizes the importance of understanding community needs, setting appropriate goals, selecting interventions, and designing effective implementation and evaluation strategies.

- Planning process in public health nutrition – community needs assessment/situational analysis, setting goals and objectives, selecting indicators, selecting interventions, planning for programme implementation and resources, planning for programme monitoring and evaluation, planning for programme termination, stakeholder participation in programme management

UNIT II: Programme Monitoring and Evaluation **8 Hours**

This unit focuses on the essential concepts, tools, and processes involved in monitoring and evaluating public health nutrition programmes.

- Programme monitoring: Definition, purpose, indicators, data collection and analysis, monitoring tools (e.g. Health Management Information System, Poshan tracker)
- Programme evaluation: Definition, purpose, types, indicators, steps of evaluation, strategies for data collection, evaluation designs

UNIT III: Nutrition surveillance **4 Hours**

This unit deals with the core concepts and components of nutrition surveillance and highlights its significance in programme planning and public health decision-making.

- Definition, objectives, indicators, agencies involved in nutrition surveillance
- Nutrition surveillance for programme planning – Triple A approach

UNIT IV: Nutrition in Emergencies and Disasters **4 Hours**

This unit deals with the nutritional challenges that arise during emergencies and disaster situations, focusing on the needs of vulnerable groups and the strategies used for assessment, relief, and rehabilitation.

- Natural and manmade disasters resulting in disaster situations
- Nutritional problems in emergencies in vulnerable groups
- Assessment and surveillance of affected population groups
- Nutritional relief and rehabilitation in disaster situations

PRACTICAL
(Credits 2; Hours 60)

1. Field visit to observe implementation of a national public health programme.
2. Critical appraisal of ongoing national public health nutrition programmes.
3. Prepare a fact sheet to present a situational analysis of an identified public health nutrition problem.
4. Prepare a tool to collect data for the situational analysis of an identified public health nutrition problem.
5. Identify key interventions and present evidence on the effectiveness and efficacy of the chosen intervention for an identified public health nutrition problem.
6. Identification of key indicators for evaluation of national public health nutrition programmes.
7. Plan a suitable action plan for: Conducting situational analysis/community needs assessment of an identified public health nutrition problem, or For effectively managing an identified public health nutrition problem, or Conducting an evaluation for public health nutrition programme.

Essential Readings
UNIT I

- Vir, S.C. (2021). Public Health Nutrition in Developing Countries. Volume-II (2nd ed.) Woodhead Publishing India Pvt Ltd.
- Park, K. (2023). Park's Textbook of Preventive and Social Medicine (27th ed.), Jabalpur, India: Banarasidas Bhanot Publishers.
- Boyle, M. A. (2022). Community Nutrition in Action (8th ed.). Cengage Learning.

UNIT II

- Vir, S.C. (2021). Public Health Nutrition in Developing Countries. Volume-II (2nd ed.) Woodhead Publishing India Pvt Ltd.
- Boyle, M. A. (2022). Community Nutrition in Action (8th ed.). Cengage Learning.

UNIT III

- Al Jawaldeh, A., Osman, D., Tawfik, A., & World Health Organization, Regional Office for the Eastern Mediterranean. (2013). *Food and nutrition surveillance systems: Technical guide for the development of a food and nutrition surveillance system for countries in the Eastern Mediterranean Region* (WHO Regional Publication, Eastern Mediterranean Series No. 33). WHO Regional Office for the Eastern Mediterranean. https://applications.emro.who.int/dsaf/EMROPUB_2013_EN_1576.pdf
- Tuffrey, V. (2016). *Nutrition surveillance systems: Their use and value* (Report). Save the Children UK
- https://resourcecentre.savethechildren.net/pdf/nutrition_surveillance_systems.pdf

UNIT IV

- World Health Organization. (2000). Management of nutrition in major emergencies. WHO. https://www.who.int/publications
- World Health Organization, UNITed Nations High Commissioner for Refugees, UNITed Nations Children's Fund, & World Food Programme. (2004, February 23). Food and nutrition needs in emergencies (Technical document). https://www.who.int/publications/i/item/food-and-nutrition-needs-in-emergencies
- World Health Organization Regional Office for the Eastern Mediterranean. (n.d.). *Nutrition in emergencies*. WHO. https://www.emro.who.int/nutrition/nutrition-in-emergencies/
- Vir, S. C. (Ed.). (2011). *Public health nutrition in developing countries* (2-volume set). Woodhead Publishing India.

Suggested Readings

- Bamji, M.S., Hemalatha, R., and Reddy, G.B. (2025). Textbook of Human Nutrition, 5th edition. CBS Publishers and Distributors.
- Ministry of Health & Family Welfare. (2019). *National Family Health Survey (NFHS-5) India 2019–21: State fact sheets*. Government of India. https://rchiips.org/nfhs/factsheet_NFHS-5.shtml
- Ministry of Health & Family Welfare. (2018). *Comprehensive National Nutrition Survey (CNNS) India 2016–18: National report*. Government of India & UNICEF.
- Ministry of Women & Child Development. (2021). *POSHAN Abhiyaan: Operational guidelines*. Government of India. https://poshanabhiyaan.gov.in
- Ministry of Health & Family Welfare. (2020). *Health Management Information System (HMIS) manual*. Government of India.

- NITI Aayog. (2017). *National nutrition strategy*. Government of India. https://library.niti.gov.in/cgi-bin/koha/opac-retrieve-file.pl?id=a0185815c4868f92466245d161108c36
- WFP India & National Institute of Disaster Management (NIDM), Ministry of Home Affairs, Government of India. (2022, November 11). Ensuring food and nutrition security in climate fragilities and disasters: The 31 inspiring practices. World Food Programme. https://www.wfp.org/publications/ensuring-food-and-nutrition-security-climate-fragilities-and-disasters-31-inspiring
- Vir, S.C. (2023). Child, Adolescent and Woman Nutrition in India: Public Policies, Programmes and Progress. KW Publishers Pvt. Ltd.

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
PLANT PRODUCTS PROCESSING AND PRESERVATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Plant Products Processing and Preservation	**4**	**3**	**0**	**1**		**Nil**

Learning Objectives

- To understand the composition, structure, and functional properties of major plant foods and relate them to processing behaviour and nutritional quality.
- To gain comprehensive knowledge of traditional and modern processing technologies used for milling, extraction, preservation, minimal processing, and value addition in plant-based foods.
- To develop the ability to evaluate post-harvest physiological changes, quality attributes, and apply scientific principles to reduce post-harvest losses.
- To develop practical skills in assessing plant food quality and preparing value-added, exotic and healthy products from cereals, pulses, oilseeds, and fruits & vegetables.

Learning Outcomes

The students would be able to:

- Explain the structure, composition, and functional properties of major plant food groups and their relevance to processing and nutrition.
- Compare traditional and modern processing methods and their effects on quality, safety, and nutritional value of plant foods.
- Evaluate physicochemical, nutritional, and sensory changes during processing, preservation, and value addition of plant foods.
- Demonstrate practical skills in quality assessment and small-scale processing of cereals, pulses, oilseeds, fruits, and vegetables.

THEORY
(Credits 3; Hours 45)

UNIT I: Cereals, Millets & Coarse Grains Technology 15 Hours

This unit deals with the structure, composition, nutritive value, milling and utilisation of products of cereals and millets.

- Structure of wheat grain, nutritive value and composition, physical and chemical properties.

- Milling of wheat: Roller milling process, flour fractions, flour treatments: bleaching, maturing agents, products and by-products of milling process.
- Introduction to other cereals and millets: Rice, maize, oats, rye, corn, pearl millet; their nutritional importance and commercial value (Puffed rice, Rice flakes, parboiling of rice, extruded and fortified rice).

UNIT II: Pulse & Oilseed Processing Technology 8 Hours

This unit deals with the composition, nutritive value, processing of pulses and different oilseeds and methods of texturization of plant protein.

- Pulses: Composition, protein quality, antinutritional factors, soaking, germination, fermentation
- Oilseeds: Seed structure & composition, Pre-processing: cleaning, conditioning, cracking, flaking, Mechanical & solvent extraction, oil refining: physical and chemical
- TVP, high-moisture extrusion, plant-based meat applications

UNIT III: Post-harvest management of Fruits & Vegetables 10 Hours

This unit deals with the post-harvest changes and management of fruits and vegetables.

- Post-Harvest Physiology & Quality: Maturity indices, ripening physiology, Climacteric vs non-climacteric, sorting, grading, washing, peeling, minimal processing, control of enzymatic browning
- Post-harvest changes and management of fruits and vegetables: Climacteric rise, horticultural maturity, physiological maturity, maturity indices, and process of ripening-physical and chemical changes. Causes of post-harvest losses, measures to reduce post–harvest losses in F & V, CA storage, and MAP.

UNIT IV: Fruits & Vegetables Processing 12 Hours

This unit deals with the processing and preservation of fruits and vegetables.

- Canning: Selection of fruits and vegetables, process of canning, factors affecting the process-time and temperature, containers of packing, lacquering, syrups and brines for canning, spoilage in canned foods.
- Jams, jellies and marmalades: Introduction, Jam: Constituents, selection of fruits, processing & technology, Jelly: Essential constituents (Role of pectin, ratio), Theory of jelly formation and defects in jelly.
- Tomato products: Selection of tomatoes, pulping & processing of tomato juice, tomato puree, paste, ketchup, sauce and soup**.**

PRACTICAL
(Credits 1; Hours 30)

List of Experiments

- Determination of physical and chemical properties of wheat
- Determination of gluten quality and quantity
- Sedimentation value of flour/ Fermenting power of yeast
- Evaluation of flour suitability through baking tests
- Preparation of plant protein-based product- soy/pulse protein-based tofu, soymilk, high protein drink, soy yoghurt, almond protein bars

- Determination of maturity indices of fruits & vegetables-TSS, Sugar:acid, TA, size & shape, weight & firmness.
- Processing of tomato products (ketchup and sauce).
- Processing of jams, jellies and marmalades.

Essential Readings

UNIT I

- Kent, N. L. (1994). *Technology of cereals* (4th ed.). Pergamon Press.
- Matz A Samuel, *Bakery Technology and Engineering*.
- Food Safety and Standards Authority of India. (2022). Food safety and testing manuals. Government of India.

UNIT II

- Chakraverty, A. (2001). *Post-harvest technology of cereals, pulses and oilseeds* (3rd ed.). Oxford & IBH Publishing Co. Pvt. Ltd.
- Manay, S. and Sharaswamy, M. (1987). Food Facts and Priniciples. Wiley Eastern Publisher.

UNIT III

- Wills, R., McGlasson, B., Graham, D., Joyce, D., & Geeson, J. (2007). *Postharvest: An introduction to the physiology and handling of fruit and vegetables* (5th ed.). CABI Publishing.
- Salikhe D K and Kadam SS (1995) *Handbook of fruit science and technology. Production Composition, Storage and processing*. Marcel Decker inc, New York

UNIT IV

- Siddapa, GS (1986) *Preservation of Fruits and Vegetables*, ICAR Publication
- Srivastava, R. P., & Kumar, S. (1998). *Fruit and vegetable preservation: Principles and practices* (3rd ed.). CBS Publishers & Distributors.
- Salikhe D K and Kadam SS (1995) *Handbook of fruit science and technology. Production Composition, Storage and processing*. Marcel Decker inc, New York

Suggested Reading

Handbook of Research on Food Processing and Preservation Technologies (5 Vols) - Eds. Birwal, Goyal, et al. (Taylor & Francis/Apple Academic Press, 2021-2022)

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

DISCIPLINE SPECIFIC ELECTIVE COURSE
FOOD PROCESSING TECHNOLOGIES

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Food Processing Technologies	**4**	**2**	**0**	**2**		**Nil**

Learning Objectives

- Understand the basic scientific principles governing microbial inactivation and quality changes under different thermal, non-thermal, and low-temperature processing conditions.
- Analyze and determine the critical process parameters (e.g.,F, D, z values; pressure, time, electric field strength) required to achieve specific safety and quality targets.
- Identify the operational mechanics, advantages, and limitations of major food processing equipment used for preservation, concentration, and product transformation (e.g., retort, HPP UNIT, extruder).
- Evaluate the impact of various processing technologies on the nutritional, physicochemical, and sensory attributes of different food commodities.
- Apply the principles of smart processing, automation, and modeling to optimize energy efficiency and quality control in modern food production lines.

Learning Outcomes

The students would be able to:

- Critically differentiate between the mechanisms of microbial inactivation achieved by thermal (Pasteurization, Sterilization) and non-thermal (PEF, HPP) technologies.
- Calculate and validate the thermal process determination parameters (F,D, z values) for safe and effective canning/retort operations.
- Select and justify the appropriate processing technology (e.g., Freeze-drying vs. Dehydration vs. HPP) for a given food product to maximize quality retention and shelf-life.
- Design a simple cold chain management plan and explain the role of freezing kinetics in preserving the quality of frozen products.
- Demonstrate knowledge of how AI and Automation are integrated with emerging technologies (Ohmic, Microwave) to create smart and efficient processing environments.

THEORY
(Credits 2; Hours 30)

UNIT I: Thermal Processing Technologies 8 Hours

This unit focuses on the fundamental principles of heat transfer, microbial death kinetics, and engineering of established preservation, concentration, and product-shaping thermal methods.

- Pasteurization and Sterilization: Batch vs. Continuous systems (HTST, UHT).Effectiveness relative to target microorganisms (e.g., *C. botulinum*).
- Evaporation, Concentration, Dehydration: Single-effect vs. Multiple-effect evaporators. Drying kinetics (constant rate, falling rate periods).Air-drying (tray, fluidized bed), spray drying, drum drying.
- Retort Processing and Canning: Canning process flow sheet. Thermal process determination: D-value (Decimal Reduction Time), z-value (Thermal Resistance Constant), and F-value (Sterilizing Value) calculations.
- Baking and Extrusion Technologies: Principles of baking (heat and mass transfer).Extrusion cooking: Components, mechanics

UNIT II: Non-Thermal Technologies 7 Hours

This unit covers advanced preservation techniques utilizing pressure, electric fields, radiation, and separation methods to achieve microbial inactivation and selective component removal with superior quality retention.

- High-Pressure Processing (HPP): Principles of pressure effects on microbial membranes and enzymes. Equipment, process parameters (pressure, hold time), and applications.
- Pulsed Electric Fields (PEF): Mechanism of electroporation. Electric field strength, pulse width, and treatment time.
- Membrane Technologies (RO, UF, MF, Nano-filtration): Principle of operation (pressure gradient).Membrane pore size, flux, and applications in clarification and concentration.
- Ozone, UV Irradiation, Cold Plasma, Ultrasound: Mechanisms of microbial inactivation for each method, Applications in surface treatment and liquid processing.

UNIT III: Low Temperature Processing Technologies 7 Hours

This unit Explores preservation through temperature reduction, focusing on the physics of chilling and freezing, cold chain management, and the quality implications of ice formation and sublimation.

- Chilling Technology and Cold-Chain Management: Refrigeration cycle basics. Chillers (air blast, hydro-cooling). Importance of Time-Temperature Integrators (TTIs) in the cold chain.
- Freezing Kinetics and Freeze-Drying (Lyophilization): Freezing curves and the zone of maximum ice crystal formation. Impact of freezing rate on ice crystal size and texture. Freeze-Drying: Principle of sublimation, stages (freezing, primary, secondary drying).
- Cryogenic Freezing, IQF, and Thawing: Use of Liquid Nitrogen and CO_2, Individual Quick Freezing (IQF): Fluidized bed technology. Controlled thawing techniques and their effect on drip loss and quality.

UNIT IV: Emerging Processing Technologies 8 Hours

This unit describes the latest volumetric and highly controlled energy delivery technologies and their integration with Industry 4.0 concepts to create adaptive, efficient, and quality-driven smart food manufacturing systems.

- Ohmic Heating and Radiofrequency (RF) Heating: Principle of volumetric heating (Joule effect).Factors affecting conductivity and heating uniformity. Applications in particle-containing fluids.
- Microwave and Infrared Heating: Mechanism of heating. Penetration depth, surface heating, and rapid drying applications.

- Smart Processing: Automation, Modelling, and AI Applications: Process Automation and Sensors: In-line monitoring systems. CFD (Computational Fluid Dynamics) and other modeling techniques for process optimization (e.g., heat/mass transfer). Integration of Artificial Intelligence (AI) and Machine Learning for predictive maintenance, quality sorting, and adaptive control.

PRACTICAL
(Credits 2; Hours 60)

List of Experiments

1. Concept of Heat penetration and determination of F, D, z-values using laboratory retort.
2. Microwaving vs. boiling effect on texture and nutrient retention in vegetables.
3. Dehydration of fruits/vegetables using hot-air and infrared drying; rehydration ratio.
4. Freezing efficiency study using air-blast or household deep freezer: determination of freezing time, drip loss upon thawing, and evaluation of textural changes in selected fruits/vegetables.
5. High-pressure processing simulation using available demonstration tools/software.
6. Membrane filtration for juice clarification and performance efficiency evaluation.
7. FTIR/texture/rheological analysis of raw vs. processed samples.
8. Packaging and shelf-life modelling using water activity and microbiological parameters.
9. Industrial visit or virtual processing simulation & report submission

Essential Readings/ Suggested Readings

UNIT I

- Kent, N. L. (1994). *Technology of cereals* (4th ed.). Pergamon Press.
- Matz A Samuel, *Bakery Technology and Engineering*.
- Food Safety and Standards Authority of India. (2022). Food safety and testing manuals. Government of India.

UNIT II

- Chakraverty, A. (2001). *Post-harvest technology of cereals, pulses and oilseeds* (3rd ed.). Oxford & IBH Publishing Co. Pvt. Ltd.
- Manay, S. and Sharaswamy, M. (1987). Food Facts and Priniciples. Wiley Eastern Publisher.

UNIT III

- Wills, R., McGlasson, B., Graham, D., Joyce, D., & Geeson, J. (2007). *Postharvest: An introduction to the physiology and handling of fruit and vegetables* (5th ed.). CABI Publishing.
- Salikhe D K and Kadam SS (1995) *Handbook of fruit science and technology. Production Composition, Storage and processing*. Marcel Decker inc, New York

UNIT IV

- Siddapa, GS (1986) *Preservation of Fruits and Vegetables*, ICAR Publication
- Srivastava, R. P., & Kumar, S. (1998). *Fruit and vegetable preservation: Principles and practices* (3rd ed.). CBS Publishers & Distributors.
- Salikhe D K and Kadam SS (1995) *Handbook of fruit science and technology. Production Composition, Storage and processing*. Marcel Decker inc, New York

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

DISCIPLINE SPECIFIC ELECTIVE COURSE

CLINICAL SPORTS NUTRITION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Clinical Sports Nutrition	4	2	0	2		**NIL**

Learning Objectives

- To understand the nutritional requirements for athletes with clinical conditions, special conditions and special dietary needs.
- To develop skills for fulfilling dietary considerations for athletes with clinical conditions, special conditions and special dietary needs.

Learning Outcomes

- The competency of providing suitable dietary modifications for various clinical conditions of sports persons.
- Competency of providing guidelines and dietary monitoring of sports persons with various clinical conditions to enable enhanced performance.

THEORY

(Credits 2; Hours 30)

UNIT I: Athletes with Nutrition related disorders **7 Hours**

This unit deals with the nutritional intake of athletes with Diabetes Mellitus, Anemias and gastrointestinal disorders.

- **Diabetes Mellitus:** Problems of athletes with Type-1 diabetes and cardiovascular diseases; Medical Nutrition Therapy (MNT) for athletes with Type-1 diabetes and cardiovascular disease; dietary guidelines and nutrient timing; type of carbohydrate and timing; pre and post event carbohydrate loading and fluids; insulin adjustments for athletes with Type-1 diabetes; special problems for athletes with Type-1 diabetes and cardiovascular disease; complications with poorly controlled diabetes.
- **Anaemias in Sports:** Definition and description; causes and consequences; physiological effects of exercise; pathophysiology; Medical Nutrition Therapy.
- **Athletes with gastrointestinal(GI) disorders, food allergies and food intolerance:** GI disturbance occurring in some athletes before, during and after competition and training;

excessive flatulence; abdominal distention; intermittent diarrhoea; constipation; Food Related Adverse Reactions (FRAR); physiological and dietary factors affecting gastric emptying and gut comfort; gut trainability; lower GI tract conditions; Irritable Bowel Syndrome(IBS); low Fermentable Oligosaccharides, Disaccharides, Monosaccharides & Polyols (FODMAP) diet for IBS; Composition, food sources of FODMAP and pattern of consumption; Celiac disease (Diagnosis and treatment); Inflammatory Bowel Disease (IBD)-Diagnosis, Nutrition related concerns for athletes with untreated IBD; Medical Nutrition Therapy.

UNIT II Nutrition for Sports injuries 9 Hours

In this unit students learn about the appropriate nutritional intake of athletes for recovery from injuries and management of paralympic athletes.

- **Sport injury and rehabilitation**: Type of injury and rehabilitation required, physiological and metabolic changes during injury and rehabilitation; eating habits commonly followed during an injury; overweight among injured athletes; role of nutrition and dietary guidelines in recovery from an injury; common injuries among athletes-Maxillofacial fractures, knee injury, Anterior Cruciate Ligament (ACL) tear, Patellofemoral syndrome, Tennis elbow, Ankle sprain, Groin pull, Hamstring sprain.
- **The Paralympic Athlete:** Athletes with physical or intellectual impairments (Classification and associated risk for injury or health outcomes); Body composition assessment and management; Eating difficulties and behaviours observed in some athletes with impairments.
- **Paralympic athletes and nutritional demands:** Dietary intakes and potential issues; reported dietary intakes; fibre timing of food intake and bowel control; fluid intake; medicine requiring Therapeutic Use Exemption (TUE) under World Anti-Doping Agency (WADA); Use of vitamin, mineral or sports supplement; travelling with paralympic athletes.

UNIT III Nutrition for athletes with special dietary needs 8 Hours

This unit explores nutritional challenges for children, female, and vegetarian athletes, focusing on growth, energy needs, and dietary guidelines for performance.

- **Children and adolescent athletes:** Nutritional issues commonly faced; eating habits and addiction; nutritional requirements for growth and training.
- **Female athletes:** Vulnerability to nutrition assault and insufficiency; differences in fuel or nutrient utilisation among female athletes; female athletic triad (FAT) including eating disorder, menstrual irregularity and poor bone mineral density and RED-S (Relative Energy Deficiency in Sport); energy availability-definition and its association with FAT and RED-S; assessment for RED-S; dietary guidelines and suggestions for RED-S; dietary guidelines and suggestions for pregnant and lactating female athletes.
- **Vegetarian athletes:** Classification; nutritional status and dietary considerations; nutritional gaps currently identified and suitable dietary modification for fuelling during training, competitions and traveling.

UNIT IV: Medical and Nutritional Issues for the Travelling Athlete 6 Hours

This unit addresses the nutritional challenges of traveling athletes, focusing on environmental monitoring, food safety, hydration, illness prevention, and adherence to dietary guidelines for optimal performance.

- Nutritional problems often faced by the travelling athletes; monitoring and documentation of climate, time zones, altitude, food safety and availability by the support staff or nutritionist;
- Market surveys and research support for the journey (travel, accommodation, catering, training and event schedules); noting vaccination and existing allergies; hydration and supplements for travel within country and overseas;
- Strategies for meeting dietary guidelines while traveling and follow up.

PRACTICAL
(Credits 2; Hours 60)

1. Planning a diet and important points for counselling for an athlete with:
    - Diabetes Mellitus;
    - Anaemia;
    - Food-Related Adverse Reactions;
    - Sports injury.
2. Planning a diet and enlisting other important aspects of dietary management of a Paralympic athlete.
3. Planning a diet for vegetarian athletes; enlisting aspects of follow up.
4. Preparing a handout for dietary support during traveling, including fluid intake strategies and.
5. Assessing athletes at risk of eating disorders using EAT -26

Essential Readings

UNIT I

- Burke, Louise, and Vicki Deakin. (2015). *Clinical sports nutrition*. McGraw-Hill.
- Jeukendrup, A., & Gleeson, M. (2019). Sport nutrition (3rd ed.). Human Kinetics.
- Jeukendrup, A. (2017). *Training the gut for athletes*. Sports Science Exchange, 28(165), 1–6.
- Bhatia, T. K., Bhatia, J., & Aryadeep. (2022). *An entity called sports anemia: Does it really exist or is a misnomer: A systematic review of existing literature*. *GMC Patiala Journal of Research and Medical Education*, 5(01), 25–33. https://www.jrme.gmcpatiala.edu.in/index.php/j/article/view/94
- Manna, I. (2020). *Study of iron status of Indian female athletes*. *Journal of Cardiovascular Disease Research*, 11(4). https://jcdronline.org/index.php/JCDR/article/view/1204 Retrieved from https://www.gssiweb.org/en/sports-science-exchange/article/training-the-gut-for-athletes

- Cannata, F., Vadalà, G., Ambrosio, L., Papalia, R., & Napoli, N. (2020). *Nutritional therapy for athletes with diabetes*. *Journal of Functional Morphology and Kinesiology*, 5(4), 83. https://doi.org/10.3390/jfmk5040083 PMC

UNIT II

- Burke, Louise, and Vicki Deakin. (2015). *Clinical sports nutrition*. McGraw-Hill.
- Broad, E. (Ed.). (2014). Sports Nutrition for Paralympic Athletes. CRC Press.
- Chowdhery, A., Agarwal, A., & Saini, A. (2025). *Prevalence of sports injuries among athletes in the Lucknow region: A cross-sectional study*. *Cureus*, 17(8), e90266. https://pubmed.ncbi.nlm.nih.gov/40964569/

UNIT III

- Burke, Louise, and Vicki Deakin. (2015). *Clinical sports nutrition*. McGraw-Hill : Chapter 18, Nutritional issues for young athletes: children and adolescents.
- Burke, Louise, and Vicki Deakin. (2015). *Clinical sports nutrition*. McGraw-Hill : Chapter 24, Special Populations: Section: Travelling Athletes

UNIT IV

- Burke, Louise, and Vicki Deakin. (2015). *Clinical sports nutrition*. McGraw-Hill : Chapter 24, Special Populations: Section: Travelling Athletes

Suggested Reading

- Campbell, B. (Ed.). (2013). Sports nutrition: enhancing athletic performance. CRC Press.
- Larson-Meyer, D. E. (2007). Vegetarian sports nutrition. Human Kinetics.
- Marie Dunford. (2017) Nutrition for Sport and Exercise.
- Jeukendrup, Asker. (2017). Training the Gut for Athletes. Sports Medicine. 47. 10.1007/s40279-017-0690-6.

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

DISCIPLINE SPECIFIC ELECTIVE

DOPING, SUPPLEMENTS AND ERGOGENIC AIDS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical		
Doping, Supplements and Ergogenic Aids	**4**	**3**	**0**	**1**		**NIL**

Learning Objectives

- To gain understanding of the various supplements used for performance enhancement in sports
- To build knowledge on the drugs used in sports and the nodal bodies for controlling doping.

Learning Outcomes

- Student will gain competence towards guiding the athlete on supplements and ergogenic aids for sports performance.
- Students will be able to understand doping control practices and assist athletes towards preventing use of banned drugs.

THEORY
(Credits 3; Hours 45)

UNIT I: Doping in Sports 12 Hours

This unit develops a basic understanding of Drugs used for performance enhancement and the Basic Acts for protection

- Doping in sports: Definition of Doping
- Categories of banned drugs in sports
- Anti-doping framework
- Role of WADA and NADA

UNIT II: Ergogenic Aids and Macronutrient Supplements 10 Hours

This unit deals with Usage of macro-nutrients as supplements for performance enhancement in Sports.

- Dietary supplements: Definition and classifications
- Ergogenic aids: Definitions and classifications;

- Dietary Supplement Health and Education Act of 1994; Government protections from dietary supplement hazards and risks;
- Carbohydrate Supplements: Carbo-loading, Sports Drinks, Bars and Gels.
- Fat Supplements: Omega Fatty acids, Medium Chain Triglycerides, Fish Oils.
- Protein Supplements: Proteins, amino acid mixtures and specific amino acids

UNIT III: Micronutrient Supplements for performance enhancement 11 Hours

In this unit students will gain knowledge on the usage of Micro-nutrients as supplements for performance enhancement in Sports.

- Vitamin Supplements: B-Complex Vitamins, Vitamin C, Vitamin D, Vitamin E Supplements, Multi-Vitamin Supplements.
- Mineral Supplements: Calcium-Magnesium, Iron Supplements, Chromium, Zinc.
- Antioxidants Supplements: Endogenous and exogenous antioxidant supplements.

UNIT IV: Metabolite and Botanical Ergogenic Supplements 12 Hours

In this unit students learn about various botanical supplements used for performance enhancement and the common metabolites in use by athletes to gain performance.

- Botanical Ergogenic Supplements: Wheat Germ oil, Beetroot, Green Tea Extract, Tart Cherries, Caffeine, Curcumin, Phytosterols, Bio Flavonoids, Ashwagandha, Trifla, Rhodiola, Shilajit, Ginseng, Grape Seed Extract, Resveratrol, Chyawanprash, Herbal Testosterone-Boosters (Eg. Tribulus Terristris, Nettle Root, Long Jack Root Etc), Bitter Orange (Citrus aurantium), Capsaicin, White Kidney Bean (Phaseolus vulgaris), Garcinia Cambogia (Hydroxycitric Acid), Guar Gum, and Psyllium, Glucomannan.
- Metabolite Ergogenic Supplements: Beta-Alanine, L-Carnitine Co Enzyme Q 10, Creatinine, DHEA, NADH, Glycerol, Inosine, Melatonine, Gamma Oryzanol (Ferurates),
- Glucosania, Alcohol, Adoptogens, Alkalinizers, Androstenedione, HMB.

PRACTICAL
(Credit 1; Hours 30)

1. Survey of supplements available in India for performance enhancement in sports
2. Development and standardisation of a sports bar or meal replacement bars
3. Composition and brand names of supplements that improve Muscle mass commonly available in the market and role of nutrients listed in athletic performance.
4. Composition and brand names of Carbohydrate supplements; Protein supplements; Fat supplements; Micronutrient-supplements; metabolite supplements; and botanical supplements commonly available in the market
5. Planning a diet for strength athletes with supplements for muscle building
6. Planning a diet for endurance athletes with supplements for energy and micronutrients

7. Providing diet for clinical conditions with supplement usage (Planning the type, quantity and timing of supplement intake)

Essential Readings

UNIT I

- Sharma, S. K., et al. (2024). *Examining doping violations among Indian women in sports*. *ShodhKosh: Journal of Visual and Performing Arts*, 5(1). Retrieved from https://www.granthaalayahpublication.org/Arts-Journal/ShodhKosh/article/view/5114 Granthaalayah Publication

- *A critical analysis of the impact of doping in sports domain*. (2021). *International Journal of Law Management & Humanities*. Retrieved from https://ijlmh.com/paper/a-critical-analysis-of-the-impact-of-doping-in-sports-domain/

- World Anti-Doping Agency. (2025). *The Prohibited List*. https://www.wada-ama.org/en/resources/world-anti-doping-code-and-international-standards/prohibited-list
- Pal, Atul. (2025). A review of doping in sports: India and the world. Sports law, policy & diplomacy journal. 3. 71-88. 10.30925/slpdj.3.1.5.
- WADA official website https://www.wada-ama.org/en

UNIT II

- TrueSport. (n.d.). *Nutrition Guide: Fueling for performance* [PDF]. TrueSport / U.S. Anti-Doping Agency (USADA). https://learn.truesport.org/wp-content/uploads/Nutrition-Guide.pdf
- Antonio, J., Kalman, D., Stout, J. R., Greenwood, M., Willoughby, D. S., & Haff, G. G. (2008). *Essentials of sports nutrition and supplements*. Humana Press
UNIT III:
- Maughan, R. J. (Ed.). (2008). Nutrition in sport (Vol. 7). John Wiley & Sons.

UNIT III

- Vedula G.S., Dietary Supplements and Nutraceuticals (pdf from ResearchGate) 2025. Publisher: Notion Press; ISBN: 9798897247493

UNIT IV:

- Castell, L. M., Stear, S. J., & Burke, L. M. (Eds.). (2015). *Nutritional supplements in sport, exercise and health: An A-Z guide* [PDF]. Retrieved from https://vdoc.pub/documents/nutritional-supplements-in-sport-exercise-and-health-an-a-z-guide-5np38amoqp70
- Maughan, R. J., et al. (2018). *Herbal medicine for sports: A review*. *Journal of the International Society of Sports Nutrition, 15*, Article 14. https://jissn.biomedcentral.com/articles/10.1186/s12970-018-0218-y

- Slater, G., & Jenkins, D. (2006). *Dietary supplements and sports performance: Metabolites, constituents, and extracts*. *Journal of the International Society of Sports Nutrition, 3*, Article 2. https://jissn.biomedcentral.com/articles/10.1186/1550-2783-3-2-1

Suggested Readings

- Ryan, M. (2012). Sports nutrition for endurance athletes. Velo Press.
- Raven, P., Wasserman, D., Squires, W., & Murray, T. (2012). Exercise Physiology: An Integrated approach. Nelson Education.
- Ehrman, J. K., Kerrigan, D., & Keteyian, S. (2017). Advanced Exercise Physiology: Essential Concepts and Applications. Human Kinetics.
- McArdle, W. D., Katch, F. I., & Katch, V. L. (2015). Exercise physiology: nutrition, energy, and human performance. 8th Edition, Lippincott Williams & Wilkins.

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