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KALINDI COLLEGE

Bachelor of Voc. – Web Designing

SEMESTER – I & II

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Category-I

Undergraduate Curriculum Framework 2022(UGCF)

DISCIPLINE SPECIFIC CORE COURSE – 1 Computer Fundamentals

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Computer Fundamentals	4	3	0	1	Class XII Pass	NA

Learning Objectives

To introduce the basic knowledge of computer fundamentals, its uses and working with Operating Systems.

Learning Outcomes

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

1. Understand the basic knowledge of computer concepts and components.
2. Understanding the concepts of operating system, window interfaces, control panel, system tools, and files.
3. Perform basic arithmetic operations using different number systems including binary arithmetic.
4. Enumerate different types of input/ output devices and types of memory.
5. Proficiency in applications such as Word and Excel.

SYLLABUS OF DSC-01

Unit I Basic Structure (3 weeks)

Computer and its characteristics, application of computers, generation of computers, types of computer, block diagram of computer, central processing unit (CPU) , arithmetic logic unit ,registers, control unit , input and output devices (keyboard, mouse, light pen, joystick, scanner, monitor, printers, etc.). switched mode power supply (SMPS), motherboard, ports and interfaces, expansion cards, ribbon cables, memory

chips, and processors.

Unit 2 Data Representation (4 weeks)

Number system (binary, decimal, octal, hexadecimal) and character representation, binary arithmetic (addition, subtraction using 1's complement and 2's complement), binary coding schemes—EBCDIC, ASCII, Unicode.

Unit 3 Software (3 weeks)

Types of software, operating system as user interface, types of operating system, programming language, device drivers, linker, and loader, utility programs,

Unit 4 Memory Organization (3 weeks)

Memory representation, memory hierarchy, cache memory, primary memory, secondary memory, hard disks, optical disks.

Unit 5 Emerging Technologies (2 weeks)

Bluetooth, cloud computing, big data, data mining, mobile computing and embedded systems.

Practical component

The practical assignment must include connecting parts of a computer and assembling it to an extent, media formatting and installation of some software. Practical exercises based on Open Office tools using document preparation and spreadsheet handling packages.

Essential Readings

1. R.Thareja, Fundamentals of computers 2nd edition, Oxford University Press, 2019
2. A. Goel, Computer Fundamentals, Pearson Education, 2010.
3. P. Aksoy, L. DeNardis, Introduction to Information Technology, Cengage Learning, 2006
4. P. K.Sinha, P. Sinha, Fundamentals of Computers, BPB Publishers, 2007

DISCIPLINE SPECIFIC CORE COURSE – 2 Fundamentals of Programming using C++

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of Programming using C++	4	3	0	1	Class XII Pass	NA

Learning Objectives

The course aims to develop structured as well as object-oriented programming skills using C++ programming language.

Learning Outcomes

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

1. Write simple programs using built-in data types of C++.
2. Understanding the concept of control structures.
3. Learn how to implement arrays and user defined functions in C++.
4. Interpret and solve problems spanning multiple domains using suitable programming constructs in C++.
5. Interpret and solve problems spanning multiple domains using the concepts of object-oriented programming in C++.

SYLLABUS OF DSC-02

Unit 1 Introduction to C++ (2 weeks):

Overview of procedural, modular and object-oriented programming, advantages and disadvantages, header files, compiling and executing simple programs in C++.

Unit 2 Programming Fundamentals (2 weeks):

Data types, variables, operators, expressions, arrays, keywords, decision making constructs, iteration, type casting, input-output statements, control statements, loops, functions, command line arguments/parameters.

Unit 3 Arrays and Strings (3 weeks):

Introduction to 1-D array, 2-D array, declaration and initialization, linear search, binary search, initializing strings, string functions.

Unit 4 Classes and Objects (4 weeks):

Concepts of abstraction, encapsulation, creating classes and objects, modifiers and access control, constructors, destructors.

Unit 5 Inheritance and Polymorphism (4 weeks):

Types of Inheritance, static polymorphism, function overloading, constructor overloading, run-time polymorphism.

Practical component

Programming exercises using Dev C++.

Essential Readings

1. E Balaguruswamy, Object Oriented Programming with C++, 8th edition, McGraw-Hill Education, 2020.
2. Robert Lafore, Object Oriented Programming in C++, 4th edition, Pearson, 2008.

Suggested Readings

- (i) Herbert Schildt, C++: The Complete Reference, 4th edition, McGraw Hill, Latest Edition.

- (ii) A. B. Forouzan, Richard F. Gilberg, Computer Science: A Structured Approach using C++, 2nd edition, Cengage Learning, 2010.

DISCIPLINE SPECIFIC CORE COURSE – 3 Fundamentals of Mathematics

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of Mathematics	4	3	1	0	Class XII Pass	NA

Learning Objectives

The objective of this course is to introduce the basic tools of sets, relations and functions. It aims to enhance the knowledge of the students about the basics of mathematics to enable them to solve real life problems.

Learning Outcomes

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

1. Gain knowledge about the basic concepts of sets, relations and functions.
2. Apply the knowledge of matrices and determinants for solving real-world problems involving linear systems of equations.
3. Apply knowledge of calculus for maximizing and minimizing the real-life situation.

SYLLABUS OF DSC-03

Unit 1: Sets, Relations and Functions: (4 weeks)

Set- union, intersection, difference, complement. Relation- domain, co-domain, range. Types of relations, closure of relations etc. Functions- introduction to functions, properties of functions,

types of functions, inverse of a function, composite function, relation vs. function. Concepts of limit and continuity of a function.

Unit 2: Matrices and Determinants: (6 weeks)

Definition of a matrix, types of matrices, algebra of matrices, transpose of a matrix, adjoint of a matrix, inverse of a matrix through adjoint. Applications of matrices- solving systems of linear equations using Matrix method and Cramer's method, calculation of values of determinants up to third order.

Unit 3: Differentiation and Integration: (5 weeks)

Differentiation- concept of differentiation, rules of differentiation, increasing and decreasing intervals for a given function, applications of derivatives. Maxima and Minima of functions (involving second or third order derivatives) and their applications.

Integration- Definite and indefinite integration.

Essential Readings:

1. Robert G Bartle, Donald R Sherbert, Introduction to Real Analysis, latest edition, John Wiley & Sons.
2. Lay, David C., Lay, Steven R., & McDonald, Judi J, Linear Algebra and its Applications, 5th edition, Pearson Education, 2016.
3. Anton, Howard, Bivens, Irl, & Davis, Stephen, Calculus, 10th edition, John Wiley & Sons Singapore Pvt. Ltd., 2016.

Suggested Readings:

1. Kenneth Hoffman, Ray Kunze, Linear Algebra, latest edition, Prentice-hall inc., Englewood Cliffs, New Jersey

GENERIC ELECTIVES (GE-1)

COMMON POOL OF GENERIC ELECTIVES (GE) COURSES OFFERED BY THE CREDIT 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		
Front End Designing	4	3	0	1	Class XII Pass	NA

Learning Objectives

The course is designed to introduce the web page designing concepts using HTML and CSS to students. The course also aims to achieve competence amongst its students to develop correct and efficient online websites for businesses.

Learning Outcomes

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

1. To gain basic knowledge of HTML.
2. To understand various elements of HTML.
3. Implementation of frames and forms.
4. Explore structures and implementation of CSS.
5. Analyze, design and develop a website.

SYLLABUS OF GE-1

Unit 1 Introduction to HTML :(2 weeks):

Basic structure of an HTML Document, Markup tags, heading, paragraphs, line breaks, HTML tags.

Unit 2 Elements of HTML (5 weeks):

Introduction to elements of HTML, working with text, lists, tables, hyperlinks, images, multimedia,

inline elements, Block level elements, internal hyperlinks, external hyperlinks.

Unit 3 Frames and Forms (3 weeks):

Frames, forms and controls.

Unit 4 Cascading Style Sheets (3 weeks):

Concept of CSS, Creating Style Sheet, CSS Properties, CSS Styling (Background, Text Format, Controlling Fonts), Working with block elements and objects, CSS Id and Class, Box Model (Introduction, Border properties, Padding Properties, Margin properties.

Unit 5 Web Designs (2 weeks): Creating page Layout and Site Designs.

Practical component

The practical assignments must include exercises on creating static websites using HTML and CSS on platforms like Notepad/Notepad++/Visual Studio.

Essential Readings

1. Bayross, I. Web enabled commercial application development using HTML, JavaScript, DHTML and PHP, 4th edition, BPB Publication (2013).
2. Boehm, A., & Ruvalcaba, Z. Murach's HTML5 and CCS3 (3rd edition). Mike Murach & Associates. (soft copy version) (2015)

Suggested Readings

1. Minnick, J. Web Design with HTML5 and CSS3 (8th edition). Cengage Learning (2015).

Category-I
Undergraduate Curriculum Framework 2022 (UGCF)
2nd Semester

DISCIPLINE SPECIFIC CORE COURSE – 4 Basics of Python Programming

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Basics of Python Programming	4	3	0	1	Class XII Pass	NA

Learning Objectives

The course is designed to introduce the programming concepts using python to students. The course aims to develop structured as well as object-oriented programming skills to solve real life problems.

Learning Outcomes

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

1. Interpret, develop and document modular Python programs of reasonable complexity.
2. Implement lists and user defined functions.
3. Analyze and solve real life problems using suitable and efficient programming constructs.
4. Analyze and solve real life problems using the concepts of object- oriented programming.

SYLLABUS OF DSC-04

Unit 1 Introduction to Python Programming: (2 weeks):

Problem solving strategies; Structure of a Python program; Syntax and semantics; Executing simple programs in Python, identifiers and keywords; Literals, numbers, and strings;

Operators; Expressions; Shorthand Notation, Input/output statements;

Unit 2 Control Structure & Function: (4 weeks):

Control structures - conditional statements (Simple if, if-else, if-elif-else), loop control statements (for, while, for-in), break, continue; Function - Built-in Function, Creating User Defined functions, passing arguments to a function, Default arguments, Function returning a value, Assert function.

Unit 3 Built-in Data Structures: (5 weeks):

Mutable and immutable objects; Strings - built-in functions for string traversal, string operators and operations; Lists - creation, traversal, slicing and splitting operations, passing list to a function; Tuples, sets, dictionaries and their operations.

Unit 4 Object Oriented Programming: (4 weeks):

Introduction to classes, objects and methods; Standard libraries.

Practical Component

The practical assignment must include installation of software like Anaconda, Jupyter and Spyder notebook and list of python programs for implementation.

Essential readings

1. Balaguruswamy E. Introduction to Computing and Problem-Solving using Python, 2nd edition, McGraw Hill Education, 2018.
2. Brown, Martin C. Python: The Complete Reference, 2nd edition, McGraw Hill Education, 2018.
3. Downey, A. B. Think Python How to think like a Computer Scientist, 3rd Edition, 2020. <https://greenteapress.com/thinkpython2/thinkpython2.pdf>

Suggested readings

1. Taneja, S., Kumar, N. Python Programming- A Modular Approach, 1st edition, Pearson Education India, 2018.
2. Guttag, J.V. Introduction to computation and programming using Python, 2nd edition, MIT Press, 2016. <https://mitpress.mit.edu/9780262337397/introduction-to-computation-and-programming-using-python>

DISCIPLINE SPECIFIC CORE COURSE – 5 Web Design and Development

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre- requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Web Design and Development	4	3	0	1	Class XII Pass	NA

Learning Objectives

The course is designed to introduce the web page designing concepts using HTML and CSS to students. The course also aims to achieve competence amongst its students to develop correct and efficient online website for businesses.

Learning Outcomes

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

1. Gain basic knowledge of HTML documents.
2. Understand basic various elements of HTML.
3. Understand HTML with CSS properties.
4. Explore structures and implementation of HTML, CSS and JavaScript.
5. Analyze, design and develop a website.

SYLLABUS OF DSC-05

Unit 1 Introduction to HTML (2 weeks):

Basic structure of an HTML document, markup tags, heading, paragraphs, line breaks, HTML tags.

Unit 2 Elements of HTML (5 weeks):

Elements of HTML, working with text, marquee text, Text formatting, Type of Lists, tables, hyperlinks, internal hyperlinks, external hyperlinks, images, multimedia, inline elements, Block level elements, Frames, Forms and controls.

Unit 3 Cascading Style Sheets (2 week):

Concept of CSS, Creating Style Sheet, CSS Properties, CSS Styling (Background, Text Format, Controlling Fonts), Working with block elements and objects, CSS Id and Class, Box Model (Introduction, Border properties, Padding Properties, Margin properties).

Unit 4 Introduction to JavaScript (4 weeks):

Introduction to Static and Dynamic Websites, Basic Programming Techniques & Constructs, GET/POST Methods, Operators, Functions, DOM Event handling, Forms Validation.

Unit 5 Web Designs (2 week):

Creating page Layout and Site Designs.

Practical component

The practical assignments must include exercises on creating static and dynamic websites using HTML, CSS and JavaScript on platforms like Notepad/Notepad++/Visual Studio.

Essential Readings

1. I. Bayross, Web enabled commercial application development using HTML, JavaScript, DHTML and PHP, 4th edition, BPB Publication, 2013.
2. A. Boehm, Z. Ruvalcaba, Murach's HTML5 and CCS3, 3rd Edition, Mike Murach & Associates, 2015.

Suggested Readings

1. J. Minnick, Web Design with HTML5 and CSS3, 8th Edition, Cengage Learning, 2015.

DISCIPLINE SPECIFIC CORE COURSE – 6

Fundamentals of Statistics

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre- requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of Statistics	4	3	0	1	Class XII Pass	NA

Learning Objectives

The objective of this course is to introduce the basic knowledge of data analysis using basic statistical tools.

Learning Outcomes

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

1. Analyze simple primary data numerically and graphically.
2. Gain the knowledge about probability theory and apply discrete and continuous probability distribution in real life situations.

SYLLABUS OF DSC-06

Unit 1: Data Visualization and Measures of Central Tendency: (4 weeks)

Diagrammatic presentation of data- bar graph, pie chart, histogram, frequency polygon, Ogive, scatter plot for bivariate data. Measures of central tendency (including graphical determination). Partition values (quartiles, deciles, and percentiles).

Unit 2: Measure of Variation: (3 weeks)

Absolute and relative. Range, quartile deviation, mean deviation, standard deviation, and variance. Moments, kurtosis and skewness.

Unit 3: Probability theory: (3 weeks)

Introduction of probability theory, types of events, concept of conditional probability, Bayes Theorem.

Unit 4: Probability Distribution: (5 weeks)

Introduction to random variable, concept of discrete and continuous Probability Distribution Function (PDF). Discrete PDF- binomial, poisson. Continuous PDF- uniform, exponential, normal.

Practical Component:

The practical assignments must include exercises on implementing the statistical concepts covered in theory using Spreadsheet – open source software.

Essential Readings:

1. S.P Gupta, Statistical Methods, 46th Edition, Sultan Chand & Sons, 2021.
2. J E Fruend, Mathematical Statistics with Applications, 8th edition, Pearson Education, 2014.

Suggested Readings:

1. S C Gupta and V K Kapoor, Fundamental of Mathematical statistics, latest edition, Sultan Chand & Sons.
2. J. K. Sharma, Business Statistics, latest edition, Pearson Education.
3. Richard Levin and David S. Rubin, Statistics for Management, latest edition, Prentice Hall of India.

GENERIC ELECTIVES (GE-2)

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of Database System	4	3	0	1	Class XII Pass	NA

Learning Objectives

The course is designed to introduce the foundation of database system concepts to students. The course aims to understand the significance of a database, relational data model, schema creation, schema normalization and to give hands-on practice on simple structured query language.

Learning Outcomes

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

1. Understand the major components of database management system and their functions.
2. Gain basic knowledge of model an application's data requirements using conceptual modeling tools and design database schemas based on the conceptual model.
3. Understand functional dependencies and normalize a given database schema to get an anomaly free database.
4. Write simple SQL queries.

SYLLABUS OF GE-2

Unit I Introduction: (3 weeks)

Introduction to database, relational data model, DBMS 3-Layer Architecture, data independence and data abstraction, database administrator, database users, end users, front end tools.

Unit 2 Data Modeling: (4 weeks)

Entity types, entity set, attribute and key, relationships, relation types, database design using ER

diagrams, relational model concepts, relational constraints, primary and foreign key, candidate key, alternate key, composite key, super-key.

Unit 3 Data Redundancy and Normalization: (3 weeks)

Functional dependency, normalization: first normal form, second normal form, third normal form.

Unit 4 Structured Query Language: (5 weeks)

Introduction to SQL, concepts of data definition language (DDL) and data manipulation language (DML),

DDL: create a database, drop a database, create table, drop table, alter table,

DML: inserting data in a table, update in a table, delete data from a table, filter data. Aggregate functions min, max, count, average, sum.

Create relationships between database tables, auto increment, check null values, group by - having, order by, nested sub-queries, exists, Join operations.

Practical component

The practical assignments must include exercises on implementing the simple SQL concepts covered in theory using MySQL - open source software.

Essential readings

- 1.R. Elmasri, S. Navathe, Fundamentals of Database Systems, 7th edition, Pearson Education, 2017.
- 2.A. Silberschatz, H. F. Korth, S. Sudarshan, Database System Concepts, 7th edition. McGraw-Hill, 2021.