SEMESTER-I

COURSE 1: COMPUTER FUNDAMENTALS AND OFFICE AUTOMATION

Course Objectives

1. **Understand foundational computing concepts**, including number systems, the evolution of computers, block diagrams, and generational progress.
2. **Develop knowledge of computer architecture**, focusing on system organization and networking fundamentals.
3. **Acquire practical skills in document creation**, formatting, and digital presentations using word processing tools.
4. **Gain proficiency in spreadsheet operations**, such as data entry, formulas, functions, and charting techniques.
5. **Introduce data visualization and basic modelling principles**, fostering analytical thinking in structuring and interpreting data sets.

Course Outcomes

1. At the End of the Course, The Students will be able to **explain different number systems**, the historical evolution of computers, and identify key components in a block diagram.
2. Learners will demonstrate **basic blocks of a computer and fundamental networking knowledge.**
3. Learners will create professional-level documents and **design visually appealing presentations** using word processing software and presentation software.
4. Learners will manipulate data within spreadsheets, apply formulas, and **generate accurate summaries and visualizations.**
5. Learners will apply data modelling techniques to **analyze, organize, and represent data effectively** in various scenarios.

SEMESTER-I

COURSE 2: PROBLEM SOLVING USING C

Course Objectives:

1. Understand the fundamentals of computer programming, Apply structured problem- solving approaches using algorithms, flowcharts, and C programming constructs.
2. Develop efficient logic using decision-making, loop, and jump control statements.
3. Utilize derived data types like arrays and strings for modular program design.
4. Design and implement modular solutions using functions, recursive logic, pointer operations, and dynamic memory management.
5. Handle complex data structures including structures, unions, and text file operations.

Course Outcomes:

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

1. Understand basic computing concepts, programming paradigms and write structured C programs.
2. Apply control flow statements to solve logical and repetitive tasks in C.
3. Implement arrays and string operations to manage and manipulate data efficiently.
4. Design modular code using functions, recursion, and appropriate parameter passing.
5. Utilize pointers and memory operations for effective data handling. Demonstrate competence in dynamic memory allocation and text file processing.

SEMESTER-II

COURSE 3: DATA STRUCTURES USING C

Course Objectives:

1. Understand fundamental concepts of algorithms and data structures with focus on complexity analysis and abstract data types.
2. Explore various types of linked lists and their dynamic memory representations and operations.
3. Analyze and implement linear data structures, such as stacks and queues, and examine their real-world applications.
4. Apply sorting and searching algorithms, understanding their performance implications and optimization strategies.
5. Design and manipulate hierarchical and graph-based structures, applying traversal algorithms and understanding their practical uses in computing.

Course Outcomes:

Learners will be able to:

1. Explain algorithm characteristics, time and space complexity, and asymptotic notations with clarity.
2. Implement and analyze different types of linked lists, including insertion, deletion, and traversal operations.
3. Develop stack and queue data structures using arrays and linked lists, and apply them in expression evaluation.
4. Apply efficient searching and sorting algorithms to solve computational problems and evaluate performance trade-offs.
5. Construct and traverse tree and graph structures, using them to solve problems like shortest path and spanning trees.

SEMESTER-II

COURSE 4: DIGITAL LOGIC DESIGN

Course Objectives

1. Introduce the fundamentals of number systems, their conversions, and binary arithmetic operations.
2. Explore digital logic through gates, Boolean algebra, and simplification techniques for logic functions.
3. Develop proficiency in designing basic combinational circuits like adders and subtractors.
4. Equip students with the skills to implement advanced combinational components such as multiplexers, encoders, and decoders.
5. Foster understanding of sequential circuits, flip-flops, counters, and shift registers for system-level design.

Course Outcomes

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

1. Apply concepts of number systems to perform radix conversions and binary arithmetic using signed and unsigned formats.
2. Simplify logic functions using Boolean algebra, Karnaugh maps, and universal gates.
3. Design and analyze combinational circuits such as half adders, full adders, and subtractors.
4. Construct advanced combinational logic modules, including multiplexers, demultiplexers, encoders, decoders, and their hierarchical versions. Realize complex Boolean functions using combinations of logic modules.
5. Develop and evaluate sequential circuits such as flip-flops, latches, counters, and shift registers.

SEMESTER-III

COURSE 8: Operating System

Learning Objectives:

To gain knowledge about various functions of an operating system like memory management, process management, device management, etc.

Course Outcomes:

Upon successful completion of the course, a student will be able to:

1. Demonstrate knowledge and comprehension of operating system functions.

2. Analyse different process scheduling algorithms and applications). The to manage processes an threads effectively

3. create strategies to prevent, detect, and recover from deadlocks, and design solutions for inter-process communication and synchronization problems.

4. Compareandcontrastdifrerentmemoryallocationstrategiesandevaluatetheireffectiveness

5. EvaluatediskschedulingalgorithmswhileimplementingOssecuritymeasures

SEMESTER-IV

COURSE-10: Object Oriented Software Engineering

Course Objective:

To introduce object-oriented software engineering (OOSE) - which is a popular technical approach o analysing, designing an application, system, or business by applying the object- oriented paradigm and visual modelling Course Outcomes: Upon successful completion of the course, a student will be able to

l. Understand and apply the fundamental principles of Object-Oriented Programming (OOP) concepts and Unified Modelling Language (UML) basics 'in the development of software solutions.

2. Analyze and specify software requirements, develop use cases and scenarios, apply object. oriented analysis and design (OOAD) principles.

3. Familiar with the concept's test-&even development (TDD) and its practical implementation.

4. Analyse and Evaluate Software Maintenance and Evolution Strategies 5. Apply Advanced

Object- Oriented Software Engineering Concepts.

SEMESTER-IV

COURSE-11: Data Communication and Computer Networks

Course Objectives

To provide students with a comprehensive understanding of networking principles, protocols, and technologies, enabling them to design, analyze, and evaluate efficient and reliable network solutions.

Course Outcomes

Upon successful completion of the course, a student will be able to:

1. Understand and apply network applications, hardware, software, and reference models for network communication.
2. Design and analyse data link layer protocols, multiple access protocols, and wireless LAN technologies.
3. Design routing algorithms, congestion control algorithms, and evaluate network layer protocols for internetworking.
4. Analyse transport service, transport protocols, and evaluate UDP and TCP in the internet.
5. Understand and evaluate application layer protocols, including DNS, email, WWW, and network management protocols.

SEMESTER-I

COURSE 2: Fundamentals of Information Technology & Office

Course Objectives

1. Understand foundational computing concepts including number systems, evolution of computers, and architectural components.
2. Explore basic computer organization and network fundamentals, recognizing device functions, system types, and internet components.
3. Demonstrate proficiency in word processing and presentation tools, applying formatting techniques and design elements for professional outputs.
4. Develop competency in spreadsheet operations, employing formulas, charts, and data-handling techniques.
5. Apply advanced data modelling and productivity features to analyse and visualize data efficiently using modem tools.

Course Outcomes:

Learners will be able to:

1. Convert between binary, decimal, octal, and hexadecimal systems, and explain computer evolution and generations with examples.
2. Leamers will demonstrate basic blocks of a computer and fundamental networking knowledge.
3. Create professional-level documents and design visually appealing presentations using word processing software and presentation software.
4. Manipulate data within spreadsheets, apply formulas, and generate accurate summaries and visualizations.

SEMESTER-II

COURSE 4: E-COMMERCE AND WEB APPLICATION DEVELOPMENT

Course Objectives:

1. Understand the evolution, types, and models of e-commerce, including technical, legal, and ethical frameworks. Explore web design technologies and content management systems relevant to e-commerce platforms.

2. Apply online marketing principles, SEO techniques, and e-payment systems with attention to logistics and risk arrangement.

3. Design interactive and responsive websites using HTML5, CSS3, and client-side scripting with JavaScript.

4. Develop and customize CMS-based interfaces using the Bootstrap framework and responsive design principles

Learners will be able to:

1. Describe e-commerce models, revenue strategies, and legal considerations including cyber laws and data privacy.
2. 2. Implement basic web structures using HTML5 and apply web design principles suitable for digital commerce.
3. Create and style dynamic websites using CSS for layout, animation, and visual enhancements.
4. Write client-side scripts using JavaScript to enable interactivity, form validation, and event handling.
5. Build responsive e-commerce front-ends using the Bootstrap framework, incorporating reusable UI components and custom styling.

SEMESTER-III

COURSE-8: Digital Marketing

Course Objectives:

The course aims to identify the impact of digital space and digital marketing in reaching out to customers. Understand the importance of Search Engines and explain the working of Search Engines. Able to Define email Marketing and have knowledge on how Social Media Marketing is to be used by marketers

Learning Outcomes:

The Students will be able to:

Use digital media for the creation of products and services and relate Search Engines in the digital marketing ecosystem. Use Search Engine Marketing for advertisements and know the Social Media platforms like Face book, Twitter, YouTube & LinkedIn for Marketing. Outline email Marketing and strategy to craft email marketing campaign.

SEMESTER-IV

COURSE-II: DATABASE MANAGEMENT SYSTEM WITH ORACLE

Course Objectives:

The course aims to help the Students will have the expertise in analyzing real time problems and providing appropriate solutions related to Computer Science & Engineering. The Students will have the knowledge of fundamental principles and innovative technologies to succeed in higher studies and research. They continue to leam and to adapt technology developments combined with deep awareness of ethical responsibilities in profession.

Learning Outcomes:

An ability to apply Knowledge of computing and mathematics in Computer Science &Engineering. They will analyze a problem, identify and define the computing requirements appropriate to its solution. An ability to design, implement and evaluate a computer-based system to meet desired needs with appropriate societal considerations. The will have knowledge on to conduct investigations, interpret data and provide conclusions in investigating complex problems related to Computer Science & Engineering. An ability to engage in continuing professional development and life long learning

SEMESTER-III
INFORMATION AND COMMUNICATION TECHNOLOGY

Objectives:

This course aims at acquainting the students with basic ICT tools which help them in their day- to-day life as well as in office and research.

Course Outcomes:

After completion of the course, student will be able to:

1. Understand the literature of social networks and their properties.
2. Explain which network is suitable for whom.
3. Develop skills to use various social networking sites like Twitter, Flickr, etc.
4. Learn a few GoI digital initiatives in higher education.
5. Apply skills to use online forums, docs, spreadsheets, etc. for communication, collaboration, and research.
6. Get acquainted with internet threats and security mechanisms.

Cyber Security

Learning Outcomes:

Upon successful completion of the course, the students will be able to

Develop an understanding of cybercrimes and various legal perspectives involved. . .

Develop a security model to handle mobile, wireless devices and related security issues of an organization.

Use the cybercrime tools and methods in solving real world problems.

Introduction to Cybercrime: Introduction, Cybercrime: Definition and origins of the word, cybercrime and Information Security, who are cyber criminals? classifications of cybercrimes, cybercrime: the legal perspectives, an Indian perspective, cybercrime and the Indian IT Act 2000, a Global perspective on Cybercrimes.