**Session:**2024-25

**Class:** BSc-I sem.

**Subject:** Problem Solving through C

**Teacher:** Dr. Abha Narwal

|  |  |
| --- | --- |
| **Month** | **Topics to be Covered** |
| **July** | * Introduction to Programming Languages: Definition, importance, and applications, and their types: High Level Lang, Middle Level and Low Level Languages |
| **August** | * Overview of C: History, Importance, Structure of C Program, Character Set, Constants and Variables, Identifiers and Keywords, Data Types, Assignment Statement, Symbolic Constant. Input/output: Formatted I/O Function-, Input Functions viz. scanf(), getch(), getche(), getchar(), gets(), output functions viz. printf(), putch(), putchar(), puts() * **Assignment 1** |
| **September** | * Operators & Expression: Arithmetic, Relational, Logical, Bitwise, Unary, Assignment, Conditional Operators and Special Operators Operator Hierarchy; Arithmetic Expressions, Evaluation of Arithmetic Expression, Type Casting and Conversion. Decision making with if statement, ifelse statement, nested if statement, else-if ladder, switch and break statement, goto statement, Looping Statements: for, while, and dowhile loop, jumps in loops * **Assignment 2** |
| **October** | * Arrays: One Dimensional arrays - Declaration, Initialization and Memory representation; Two Dimensional arrays -Declaration, Initialization and Memory representation. Functions: definition, prototype, function call, passing arguments to a function: call by value; call by reference, recursive functions. Strings: Declaration and Initialization, String I/O, Array of Strings, String Manipulation Functions: String Length, Copy, Compare, Concatenate etc., Search for a Substring * **Test** |
| **November** | * Pointers in C: Declaring and initializing pointers, accessing address and value of variables using pointers; Pointers and Arrays. User defined data types: Structures - Definition, Advantages of Structure, declaring structure variables, accessing structure members, Structure members initialization, Array of Structures; Unions - Union definition; difference between Structure and Union. * **Sessional** |

**Session:** 2024-25

**Class:** BSc-III sem.

**Subject:** Operating System

**Teacher:** Dr. Abha Narwal

|  |  |
| --- | --- |
| **Month** | **Topics** |
| **July** | * Introductory Concepts: Operating System, Functions and Characteristics, |
| **August** | * Historical Evolution of Operating Systems, Operating System Structure. Types of Operating System: Real time, Multiprogramming, Multiprocessing, Batch processing. Operating System Services, Operating System Interface, Service System Calls, System Programs. Process Management: Process Concepts, Operations on Processes, Process States and Process Control Block. Inter-Process Communication.. * **Assignment 1** |
| **September** | * CPU Scheduling: Scheduling Criteria, Levels of Scheduling, Scheduling Algorithms, Multiple Processor Scheduling, Algorithm Evaluation. Synchronization: Critical Section Problem, Semaphores, Classical Problem of Synchronization, Monitors. Deadlocks: Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection and Recovery * **Assignment 2** |
| **October** | * Memory Management Strategies: Memory Management of SingleUser and Multiuser Operating System, Partitioning, Swapping, Contiguous Memory Allocation, Paging and Segmentation; Virtual Memory Management: Demand Paging, Page Replacement Algorithms, Thrashing. * **Test** |
| **November** | * Implementing File System: File System Structure, File System Implantation, file operations, Type of Files, Directory Implementation, Allocation Methods, and Free Space Management. Disk Scheduling algorithm- SSTF, Scan, C- Scan, Look, C-Look. SSD Management * **Sessional** |

**Session:** 2024-25

**Class:** BSc-V Sem.

**Subject:** Fundamentals of Database Systems

**Teacher:** Dr. Abha Narwal

|  |  |
| --- | --- |
| **Month** | **Topics** |
| **July** | * Basic Concepts – Data, Information, Records and files. Traditional file Based Approach-Limitations of Traditional File Based Approach, |
| **August** | * Database Approach-Characteristics of Database Approach, Database Management System (DBMS), Components of DBMS Environment, DBMS Functions and Components, Advantages and Disadvantages of DBMS... * **Assignment 1** |
| **September** | * Actors on the Scene - Data and Database Administrator, Database Designers, End users Applications Developers and Workers behind the Scene., Database System Architecture – Three Levels of Architecture, Schemas – External, Conceptual and Internal Level, Database Languages – VDL, DDL, SDL, DML, SQL, Mappings – External/ Conceptual and Conceptual/Internal, Instances, Data Independence – Logical and Physical Data Independence * **Assignment 2** |
| **October** | * Data Models: High Level, Low Level and Representational – Records- based Data Models, Object-based Data Models, Physical Data Models and Conceptual Models * Entity-Relationship Model – Concepts, Entity Types, Entity Sets, Attributes, Relationships, Constraints, Keys, Degree, Cardinality etc. * ER Diagrams of any Database Organization- Inventory System, Payroll System, Reservation System, Online Book Store etc * **Test** |
| **November** | * Classification of Database Management System, Centralized and Client Server architecture * Relational Data Model:-Brief History, Terminology in Relational Data Structure, Relations, Properties of Relations, Keys – Primary, Secondary, Composite, Candidate, Alternate and Foreign Key, Domains, Integrity Constraints over Relations * **Sessional** |

**Session:** 2024-25

**Class:** BSc-V sem.

**Subject:** Web Designing

**Teacher:** Dr. Abha Narwal

|  |  |
| --- | --- |
| **Month** | **Topics** |
| **July** | * Introduction to Internet and World Wide Web, Evolution and History of World Wide Web |
| **August** | * Basic Features; Web Browsers; Web Servers; Hypertext Transfer Protocol; URLs; Searching and Web-Casting Techniques; Search Engines and Search Tools. * **Assignment 1** |
| **September** | * Steps for Developing Website; Choosing the Contents; Home Page; Domain Names; Internet Service Provider; Planning and Designing Web Site; Creating a Website; Web Publishing: Hosting Site * **Assignment 2** |
| **October** | * Introduction to HTML; Hypertext and HTML; HTML Document Features; * HTML Tags; Header, Title, Body, Paragraph, Ordered/Unordered Line, Creating Links; Headers; Text Styles; Text Structuring; Text Colors and Background; Formatting Text; Page layouts; Insertion of Text, Movement of Text. * **Test** |
| **November** | * Images: Types of Images, Insertion of Image, Movement of Image, Ordered and Unordered lists; Inserting Graphics; Table Handling Functions like Columns, Rows, Width, Colours; Frame Creation and Layouts; Working with Forms and Menus; Working with Buttons like Radio, Check Box * **Sessional** |