**BCA-III (5th Sem)**

**BCA-351: Web Designing**

**Lesson Plan(2022-23)**

**Month of September**

Introduction to Internet and World Wide Web; Evolution and History of World Wide Web; Basic Features; Web Browsers; Web Servers; Hypertext Transfer Protocol; URLs; Searching and Web- Casting Techniques; Search Engines and Search Tools

**Month of October**

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;

**Month of November**

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

**Month of December**

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;

**B.Sc.-III (3rd Sem)**

**Paper I: Data Structures**

**Lesson Plan(2022-23)**

**Month of September**

Introduction: Elementary data organization, Data Structure definition, Data type vs. data structure, Categories of data structures, Data structure operations, Applications of data structures, Algorithms complexity and time-space trade off, Big-O notation. Strings: Introduction, String strings, String operations, Pattern

matching algorithms.

**Month of October**

Arrays: Introduction, Linear arrays, Representation of linear array in memory, Traversal, Insertions, Deletion in an array, Multidimensional arrays, Parallel arrays, Sparce matrics. Linked List: Introduction, Array vs. linked list, Representation of linked lists in memory, Traversal, Insertion, Deletion, searching in a linked list, Header linked list, Circular linked list, Two-way linked list, Garbage collection, Applications of linked lists. Algorithms for Insertion, deletion in array, Single linked list

**Month of November**

Stack: Introduction, Array and linked representation of stacks, Operations on stacks, Applications of stacks: Polish notation, Recursion. Queues: Introduction, Array and linked representation of queues, Operations on queues, Deques, Priority Queues, Applications of queues

**Month of December**

Tree: Introduction, Definition, Representing Binary tree in memory, Traversing binary trees, Traversal algorithms using stacks and using recursion. Graph: Introduction, Graph theory terminology, Sequential and linked representation of graphs.

**B.Sc.-III (3rd Sem)**

**Paper II: Software Engineering**

**Lesson Plan(2022-23)**

**Month of September**

Introduction: Program vs. Software, Software Engineering, Programming paradigms, Software Crisis – problem and causes, Phases in Software development: Requirement Analysis, Software Design, Coding, Testing, Maintenance, Software Development Process Models: Waterfall, Prototype, Evolutionary and Spiral models, Role of Metrics.

**Month of October**

Feasibility Study, Software Requirement Analysis and Specifications: SRS, Need for SRS, Characteristics of an SRS, Components of an SRS, Problem Analysis, Information gathering tools, Organizing and structuring information, Requirement specification, validation and Verification. SCM

**Month of November**

Structured Analysis and Tools: Data Flow Diagram, Data Dictionary, Decision table, Decision tress, Structured English, Entity-Relationship diagrams, Cohesion and Coupling. Gantt chart, PERT Chart, Software Maintenance: Type of maintenance, Management of Maintenance, Maintenance Process, maintenance

characteristics.

**Month of December**

Software Project Planning: Cost estimation: COCOMO model, Project scheduling, Staffing and personnel planning, team structure, Software configuration management, Quality assurance plans, Project monitoring plans, Risk Management. Software testing strategies: unit testing, integration testing, Validation testing, System testing, Alpha and Beta testing.

**BCA-II (3rd Sem)**

**BCA-232: Data Structures**

**Lesson Plan(2022-23)**

**Month of September**

Introduction: Elementary data organization, Data Structure definition, Data type vs. data structure, Categories of data structures, Data structure operations, Applications of data structures, Algorithms complexity and time-space trade off, Big-O notation. Strings: Introduction, String strings, String operations, Pattern

matching algorithms.

**Month of October**

Arrays: Introduction, Linear arrays, Representation of linear array in memory, Traversal, Insertions, Deletion in an array, Multidimensional arrays, Parallel arrays, Sparce matrics. Linked List: Introduction, Array vs. linked list, Representation of linked lists in memory, Traversal, Insertion, Deletion, searching in a linked list, Header linked list, Circular linked list, Two-way linked list, Garbage collection, Applications of linked lists. Algorithms for Insertion, deletion in array, Single linked list

**Month of November**

Stack: Introduction, Array and linked representation of stacks, Operations on stacks, Applications of stacks: Polish notation, Recursion. Queues: Introduction, Array and linked representation of queues, Operations on queues, Deques, Priority Queues, Applications of queues

**Month of December**

Tree: Introduction, Definition, Representing Binary tree in memory, Traversing binary trees, Traversal algorithms using stacks and using recursion. Graph: Introduction, Graph theory terminology, Sequential and linked representation of graphs.

**BCA-II (3rd Sem)**

**BCA-234: Software Engineering**

**Lesson Plan(2022-23)**

**Month of September**

Introduction: Program vs. Software, Software Engineering, Programming paradigms, Software Crisis – problem and causes, Phases in Software development: Requirement Analysis, Software Design, Coding, Testing, Maintenance, Software Development Process Models: Waterfall, Prototype, Evolutionary and Spiral models, Role of Metrics.

**Month of October**

Feasibility Study, Software Requirement Analysis and Specifications: SRS, Need for SRS, Characteristics of an SRS, Components of an SRS, Problem Analysis, Information gathering tools, Organizing and structuring information, Requirement specification, validation and Verification. SCM

**Month of November**

Structured Analysis and Tools: Data Flow Diagram, Data Dictionary, Decision table, Decision tress, Structured English, Entity-Relationship diagrams, Cohesion and Coupling. Gantt chart, PERT Chart, Software Maintenance: Type of maintenance, Management of Maintenance, Maintenance Process, maintenance

characteristics.

**Month of December**

Software Project Planning: Cost estimation: COCOMO model, Project scheduling, Staffing and personnel planning, team structure, Software configuration management, Quality assurance plans, Project monitoring plans, Risk Management. Software testing strategies: unit testing, integration testing, Validation testing, System testing, Alpha and Beta testing.

**BCA-I (2nd Sem)**

**BCA – 116: Programming in C**

**Lesson Plan(2022-23)**

**Month of September**

Overview of C: History of C, Importance of C, Structure of a C Program. Elements of C: C character set, identifiers and keywords, Data types, Constants and Variables, Assignment statement, Symbolic constant. Input/output: Unformatted & formatted I/O function in C, Input functions ( scanf(), getch(), getche(), getchar(), gets() ), Output functions ( printf(), putch(), putchar(), puts() ).

**Month of October**

Operators & Expression: Arithmetic, relational, logical, bitwise, unary, assignment, conditional operators and special operators. Arithmetic expressions, evaluation of arithmetic expression, type casting and conversion, operator hierarchy & associativity. Decision making & branching: Decision making with IF statement, IF-ELSE statement, Nested IF statement, ELSE-IF ladder, switch statement, goto statement.

**Month of November**

Decision making & looping: For, while, and do-while loop, jumps in loops, break, continue statement. Functions: Definition, prototype, passing parameters, recursion.

**Month of December**

Storage classes in C: auto, extern, register and static storage class, their scope, storage, & lifetime. Arrays: Definition, types, initialization, processing an array, passing arrays to functions, Strings & arrays.

**PGDCA**

**CS-DE-12: Problem Solving Through ‘C’**

**Lesson Plan(2022-23)**

**Month of October**

Programming Fundamentals: Introduction to Compiler, Assembler and Interpreter, Concept of problem solving, Problem definition, Program design, Debugging, Types of errors in programming,

**Month of November**

Documentation. Flowcharting, decision tables, algorithms, Structured programming concepts, Programming methodologies - top-down and bottom-up programming. Overview of C: History of C, Importance of C, Structure of a C Program

**Month of December**

Elements of C: C character set, identifiers and keywords, Data types, Constants and Variables. Operators: Arithmetic, relational, logical, bitwise, unary, assignment and conditional operators and their hierarchy & associativity. Input/output: Unformatted & formatted I/O function in C.

**Month of January**

Control statements: Sequencing, Selection: if and switch statement; Repetition: for, while, and do-while loop; break, continue, goto. Functions: Definition, prototype, passing parameters, function calls, library functions, recursion. Storage classes in C: auto, extern, register and static storage class, their scope, storage, & lifetime.

**Month of February**

Arrays: Definition, types, initialization, processing an array, passing arrays to functions, dynamic arrays.

**Month of March**

Strings: String handling, reading and writing strings, string functions, dynamic strings.

Pointers: Declaration, operations on pointers, pointers and arrays, dynamic memory allocation, pointers and functions, pointers and strings

**Month of April**

Structure & Union: Definition, processing, Structure and pointers, passing structures to functions, Union