Vidnyan Mahavidyalaya Sangola

Department of Computer Science

Teaching Plan

Teacher Name-Sargar B.R **Academic Year :2022-23**

Class	Subject	July	August
BCA-III	**Core Java**	**Unit-I** **Introduction to Java Programming** • Overview of Java • Features of Java as programming language / Platform • JDK Environment and Tools **Unit-II** **Java Programming Fundaments** • Data types, Variables, Operators, Keywords, Naming Conventions • Structure of Java Program • Flow Control- Decision, Iterations • Arrays	**Unit-III** **Classes and Objects** • Class – Members access control, Objects, Constructors, Use of 'this' keyword • Static, non-static data members and methods. • public, private & protected data members **Unit-IV** **Inheritance & Polymorphism** • Access/Scope specifiers protected • Super, extends, single, multiple inheritance • Method overriding • Abstract classes & ADT, 'final' keyword • Extending interfaces
B.Sc.(ECS) -II	**Data Structure-I**	**Unit 1:** An Introduction to Data Structures: Introduction, Definition and types of Data structure. Abstract Data Type (ADT)- ADT for array, ADT for stack, ADT for queue. Algorithm: Definition, characteristics of algorithm. Complexity of algorithm- Space complexity, time complexity, Big-O Notation Design strategies of Algorithm- Divide and Conquer, Greedy Algorithm, branch & bound, backtracking, and dynamic programming.	**Unit 2:** Array: Introduction to Array, types of array- one dimensional, two dimensional and multidimensional, Operations of array- insert, delete, traverse, count, display, reverse **Unit 3 Stack:** Introduction to Stack, Operations of stack- Create, isempty, isfull, push, pop, display, Implementation of stack using array (Static Implementation) Applications of Stack-Conversion of infix expression to postfix

			expression, Conversion of infix expression to prefix expression, Matching parenthesis in an expression (Checking expression is valid or invalid), Evaluation of postfix expression, Stack in recursion, Implementation of applications of stack.
B.Sc.(ECS) -II	**Data Structure-II**	**Unit- 1** Trees: Introduction to Tree, Introduction to Binary Trees, Types of Binary tree- Strictly Binary tree, Complete Binary tree, Extended (2-Tree) Binary tree, Binary expression tree, Binary Search tree, Heap Tree- Min heap tree, Max heap tree, Representation of Binary tree using- Array, Linked list Operations of Binary search tree-Creating and inserting node, Searching node, Counting total nodes, Counting and displaying leaf nodes, Tree Traversal methodsPreorder, Inorder, Postorder, Deletion of Nodes, Implementation of binary search tree, Height balanced tree/Balanced Binary Tree/AVL tree, Application of tree.	**Unit-2** Graph: Concept & terminologies used in graph, Graph Representation using- Array and linked list, Graph traversals – BFS & DFS, Dijakstra's shortest path algorithm, and application of graph.

Class	Subject	September	October
BCA-III	**Core Java**	**Unit- V** **Exception Handling** • Exceptions and Types, try. catch and finally block • throw & throws statement, user-defined exceptions **Unit- VI** **Threading** • Java thread lifecycle • Thread class & run able interface Thread priorities & synchronization	**Unit-VIII** **Event Programming** • Java awt components: window, Frame, Panel, Dialog, File Dialog, Label, Button, List, Check Box, Text Components, Choice, Menu Components • Layout Managers • Border, Flow, Grid, Event Model • Listeners / Adapters **Unit-IX** **JDBC**

		• Usage of wait & notify **Unit-VII** **Java I/O** • Java I/O package, byte & character stream • Reader & writer, file reader & file writer.	• Introduction to JDBC • Feature & Architecture of JDBC • Types of drivers, its advantage & disadvantage • JDBC Statements & Methods : statement, PreparedStatement, CallableStatement, execute(), executeQuery(), executeUpdate(), Working with Resultset interface, Working with Resultset Metadata.
B.Sc.(ECS) -II	**Data Structure-I**	**Unit -4** Queue: Introduction to Queue, Operations of queue- Create, isempty, isfull, insert, remove, display , Types of Queue- Linear Queue, Circular Queue, Deque (Double Ended Queue), Priority queue. Implementation of all types of queue using array (Static Implementation), Difference between stack and queue, Applications of Queue.	**Unit -5** Linked Lists: Introduction to Linked Lists, Difference between Array and linked list. Types of linked list- 1) Linear linked list- Singly (Single) linear linked list and Doubly (Double) linear linked list. 2) Circular linked list- Singly (Single) circular linked list and Doubly (Double) circular linked list, Operations of linked listCreation, Insertion, Deletion, Traversing, Searching, Display, count, reverse, Implementation of all types of linked list, Implementation of stack using linked list (Dynamic stack),Implementation of queue using linked list (Dynamic queue).
B.Sc.(ECS) -II	**Data Structure-II**	**Unit -3** Sorting: Introduction and definition of Sorting, Types of Sorting-Bubble sort, Quick sort, Shell sort, Selection sort, Insertion sort, Heap Sort, Merge sort, Radix Sort, Tree Sort techniques.	**Unit-4** Searching: Introduction and definition of Searching, Types of searching-Linear (Sequential) Search, Binary Search, Indexed sequential search, Hashing and different Hash functions.

Teacher Name & Signature **Head of Department**