SEMESTER -- II

COURSE TITLE :- DATA STRUCTURES THROUGH C **COURSE CODE- BIT-203**

UNIT-I

Introduction

Data Structure - General , Various Levels of Implementation and Levels. **Static Data Structure**: Basic terminology, Linear Arrays and their Representation in memory, Traversing, Inserting and Deleting algorithms in Linear arrays.

Sorting and searching Algorithms : Searching :(Linear search, Binary search, Comparison of Linear and Binary search) Sorting :(Bubble sort, Insertion Sort, Selection Sort, Quick Sort).

UNIT-II

Stacks: Definitions and operations (Insertion, Deletion and Display) Applications of Stacks; Conversion of operations from infix to postfix and Conversion of operations from infix to prefix.

Queues: Definitions and operations in Ordinary Queue (Insertion, Deletion and Display), D- queue. Types of Queues and their application , Implementation as a static

UNIT- III

Review of Pointers , Structures and pointer variables: Declaring and initializing pointers, dangling pointer, array of pointers, Difference between array names and pointers, Passing function parameters by value and by reference, Dynamic Allocation and de-allocation of memory, malloc( ), calloc( ), free( ), Dynamic Arrays , Pointer to a structure , pointer to a structure passed as argument to a function.

UNIT-- IV

Linked Lists and their applications :Definition of linked lists and their representation in memory. Traversing and searching in linked list, Insertion and Deletion of nodes from singly linked list, reversing a linked list, circular linked lists, doubly linked lists. Applications of Linked Lists (create & Display)

Trees: Binary Trees; Linked representation of a Binary Tree, Traversal of a Binary Tree (Pre-order, In-order, Post-order), Binary Search Trees (BST); Inserting, and searching of a node in a BST.

Recommended Books:

1. Lipischutz "Data Structures"
2. Yashwant Kanitkar-"Understandings Pointers in C"
3. Aaron M.Tenenbaum "Data Structures using C and C++"

Suggested Reading:

1. "Theory and Problems of Data Structure"-Seymour (Schuam's Outlines Series)
2. Trembley Sorenson-"Data Structures"
3. Srivastava & Srivastava- "Data Structures in Depth"