

## **Data Structure Through C Language**

### **Unit 1 : Introduction to Data Structure**

Basic concept of data, data type, Elementary structure, Arrays: Types, memory representation, address translation functions for one & two dimensional arrays and different examples.

### **Unit 2 : Algorithms**

(Complexity, time-Space, Algorithmic Notation.

### **Unit 3 : Linked List**

Introduction to Linked List , representation of single linked list.

### **Unit 4 : Operations on Linked List**

Insertion into a linked list, deletion into a linked list, searching and traversal of elements and their comparative studies with implementations using array structure.

### **Unit 5 : Stacks**

Definitions, representation using array and linked list structure, applications of stack.

### **Unit 6 : Queues**

Definitions, representation using array, linked representation of queues, application of queue.

### **Unit 7 : Searching**

Linear and binary search algorithms, performance and complexity using big 'O' notation

### **Unit 8 : Sorting**

Sorting algorithms (Complexity, advantages and disadvantage, implementation), bubble sort, insertion sort, selection sort, quick sort.

### **Unit 9 : Trees**

Definition and implementation : Binary Tree, Tree traversal algorithms (inorder, preorder, postorder), postfix, prefix notations

### **Unit 10 : Binary Search Tree**

Searching in Binary Search Tree, insertion and deletion in Binary Search Trees

### **Unit 11 : B-Tree**

Searching, Insertion and Deletion in a B-Tree.

### **Unit 12 : Graph**

Introduction to Graphs; depth first search and breadth first search technique.

### **Suggested Readings:**

1. Rajni Jindal, Data structure using C, Umesh Publication
2. HorowitzE, Fundamental of data structure, Galgotia Publications