

Academy of Information Technology (AIT)

Certificate Course

in

DATA STRUCTURES USING “C”

SYLLABUS

DATA STRUCTURE

Module – I

Introduction to data structures: storage structure for arrays, sparse matrices, Stacks and Queues: representation and application. Linked lists: Single linked lists, linked list representation of stacks and Queues. Operations on polynomials, Double linked list, circular list.

Module – II

Dynamic storage management-garbage collection and compaction, infix to post fix conversion, postfix expression evaluation. Trees: Tree terminology, Binary tree, Binary search tree, General tree, B+ tree, AVL Tree, Complete Binary Tree representation, Tree traversals, operation on Binary tree-expression Manipulation.

Module –III

Graphs: Graph terminology, Representation of graphs, path matrix, BFS (breadth first search), DFS (depth first search), topological sorting, Warshall's algorithm (shortest path algorithm.) Sorting and Searching techniques – Bubble sort, selection sort, Insertion sort, Quick sort, merge sort, Heap sort, Radix sort. Linear and binary search methods, Hashing techniques and hash functions.

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Lecture-01	Introduction to Data structure
Lecture-02	Search Operation
Lecture-03	Sparse Matrix and its representations
Lecture-04	Stack
Lecture-05	Stack Applications
Lecture-06	Queue
Lecture-07	Linked List
Lecture-08	Polynomial List
Lecture-09	Doubly Linked List
Lecture-10	Circular Linked List
Lecture-11	Memory Allocation
Lecture-12	Infix to Postfix Conversion
Lecture-13	Binary Tree
Lecture-14	Special Forms of Binary Trees
Lecture-15	Tree Traversal

Lecture-16	AVL Trees
Lecture-17	B+-tree
Lecture-18	Binary Search Tree (BST)
Lecture-19	Graphs Terminology
Lecture-20	Depth First Search
Lecture-21	Breadth First Search
Lecture-22	Graph representation
Lecture-23	Topological Sorting
Lecture-24	Bubble Sort
Lecture-25	Insertion Sort
Lecture-26	Selection Sort
Lecture-27	Merge Sort
Lecture-28	Quick sort
Lecture-29	Heap Sort
Lecture-30	Radix Sort
Lecture-31	Binary Search
Lecture-32	Hashing
Lecture-33	Hashing Functions