

MCA I Year I Semester Subject Code: 24MCA1005 Data Structures

Contact Hour	Unit No.	Topic Name	Teaching Methodology	Remarks
1	1	Introduction to C, Variables, and Data Types	Blackboard	
2	1	Operators and Expressions	Blackboard	
3	1	Managing Input and Output Operators	Blackboard	
4	1	Decision Making – Branching	Blackboard	
5	1	Looping Structures	Blackboard	
6–7	1	Arrays	Blackboard	
8–9	1	Functions – Definition, Calling, and Passing Parameters	Blackboard	
10	1	Structures and Unions	Blackboard	
11	1	Pointers – Basics and Usage	Blackboard	
12	2	Data Structures – Definition, Types	Blackboard	
13–14	2	Recursion – Definition, Design, Linear and Binary Recursion	Blackboard	
15	2	Recursive Algorithms – Implementation Examples	Blackboard	
16	2	Preliminaries of Algorithms, Analysis and Complexity	Blackboard	
17	2	Singly Linked List – Concept & Implementation	Blackboard	
18	2	Singly Linked List – Insertion and Deletion	Blackboard	
19	2	Doubly Linked List – Implementation & Operations	Blackboard	
20	2	Circular Linked List – Implementation & Operations	Blackboard	
21	2	Searching Operations on Linear List	Blackboard	
22	3	Stacks – Operations	Blackboard	
23	3	Array Representation of Stacks	Blackboard	
24	3	Linked List Representation of Stacks	Blackboard	
25	3	Stack Applications (e.g., Expression Evaluation)	Blackboard	
26	3	Queues – Operations	Blackboard	
27	3	Array Representation of Queues	Blackboard	
28	3	Linked List Representation of Queues	Blackboard	
29–30	4	Insertion Sort, Selection Sort, and Bubble Sort	Blackboard	
31–32	4	Quick Sort – Algorithm and Implementation	Blackboard	
33–34	4	Merge Sort – Algorithm and Implementation	Blackboard	

35	5	Binary Trees – Terminology and Representation	Blackboard	
36	5	Tree Traversals – Preorder, Inorder, Postorder	Blackboard	
37–38	5	Binary Search Trees – Definition, Implementation	Blackboard	
39	5	BST – Searching Operation	Blackboard	
40	5	BST – Insertion and Deletion	Blackboard	
41	5	B-Trees – Introduction and Use Cases	Blackboard	
42-43	5	B-Trees – Insertion and Searching	Blackboard	
44-45	5	B+ Trees – Definition and Differences from B-Trees	Blackboard	
46-48	5	B+ Trees – Searching, Insertion and Deletion	Blackboard	