

Course Code	Course Name	Teaching Scheme (Hrs/week)			Credits Assigned			
		L	T	P	L	T	P	Total
MCAL23	Data Structures Lab	--	--	4	--	--	2	2
		Examination Scheme						
		Term Work		Practical		Oral		Total
		40		10		10		60

Pre-requisite Course Codes	Object Oriented Programming Lab (MCAL11)	
Course Outcomes	CO1	Demonstrate various sorting techniques.
	CO2	Apply searching and hashing techniques for efficient data retrieval and data mapping.
	CO3	Demonstrate various operations of linear data structures i.e. stack, queue and linked list
	CO4	Create binary tree and its variants.
	CO5	Apply graph traversal techniques.

Exp. No.	Experiment details	Ref	Marks
1	Sorting Techniques: Bubble , Insertion , Selection , Shell , Quick , Radix	1,2,3	5
2	Searching Techniques: Sequential search, Binary Search Hashing Techniques: Modulo division, Digit Extraction, Folding, Mid square Collision Resolution technique: Linear probe	1,2,3	5
3	Stack implementation Implementation of Stack(using Array & Linked list).	1,2,3	5
4	Queue implementation Implement all the different types of queues(eg: Simple Queue, Doubly Ended Queue, Circular Queue)	1,2	5
5	Singly linked list implementation A menu driven program that implements singly linked list for the following operations: create , display , count , insert , delete , search, sort, reverse Doubly linked list implementation A menu driven program that implements doubly linked list for the following operations: create , display , count , insert , delete , search ,sort, reverse Singly circular linked list implementation A menu driven program that implements Singly circular linked list for the following operations: create , display , count , insert , delete , search ,sort, reverse	1,2,3	5
6	Binary Search Tree implementation A menu driven program	1,3	5

	a. Create a Binary search tree b. Traverse the tree in In order, Preorder and Post order c. Search the tree for a given node and delete the node		
7	Heap Tree implementation A menu driven program that implements Heap tree (Maximum and Minimum Heap tree) for the following operations: (Using Array) Insert, Delete	1,3	5
8	Graph Implementation Implementation of insert and delete nodes in a graph using adjacency matrix along with Graph Traversal(DFS and BFS)	1,2,3	5
TOTAL			40

References:

- [1] Richard F Gilberg, Behrouz A Forouzan, “Data Structure A Pseudocode Approach with C” Brooks/Cole Publishing Company, Second edition.
- [2] Moshe, Tenenbaum, “Data Structures Using C and C++”, Pearson Education Asia Pvt. Ltd, Second edition.
- [3] Tremblay, Jean-Paul & Sorenson, “An Introduction to Data Structures with Applications”, Tata McGraw-Hill , Second edition.