

<b>Branch: BCA</b>	<b>Semester-IV</b>
<b>Subject Code: 4101</b>	<b>Lecture: 04</b> <b>Credit: 04</b>
<b>Subject Title</b>	<b>DATA STRUCTURES AND FILE ORGANIZATION</b>

<b>Modules</b>	<b>Sr. No.</b>	<b>Topic and Details</b>	<b>No of Lectures Assigned</b>	<b>Marks Weight age %</b>
UNIT-I	1	<b>Introduction:</b> Definition, Classification of data structure (Primitive and non Primitive), Description of various data structure, Arrays, Lists, Stacks, Queues, Trees and Graphs	4	8
	2	<b>Arrays:</b> One dimensional array, its Initialization, Implementation of One dimensional array in memory, Insertion, deletion of an element from One dimensional array, Traversing of an array	4	8
UNIT-II	5	<b>Linked lists:</b> Introduction, Keyterms, Advantages& disadvantages Linear linked lists ( , ) o Types(Singly, Doubly, Circular) Operations (Inserting, Deleting nodes)	5	10
	3	<b>Stack :</b> Introduction , Stack implementation, Operations on stack (Push Pop), Implementation of stack using pointer, Applications of stack, Infix prefix, postfix notations Algorithms for converting from one form to another	6	12
	4	<b>Queue :</b> Introduction and Queue implementation, Operations on queue (Insertion & deletion ), Limitations of simple queue Circular queue, Double ended queue(dequeue), Application queue& it's types	6	12
UNIT-III	6	<b>Trees</b> – Introduction, terminology, Binary tree , Creation, Operations, Strictly Binary tree, Complete Binary tree Binary tree representation, As Array and Linked lists	6	12

		Traversal (Inorder , preorder, postorder)		
	7	<b>Graphs</b> - Introduction, terminology Graph representation, Applications of graph, Graph traversal (BFS, DFS, Shortest path), Spanning tree, Minimum spanning tree	6	12
	8	<b>Searching &amp; Sorting:</b> Searching (Sequential, Binary search) Sorting (Bubble sort, Selection sort, Quick sort, Heap sort, Insertion sort)	5	10
UNIT-IV	9	<b>Introduction to Files &amp; Concept of Record:</b> Definition, Forming Records, Modes of Accessing Files, File Organisation (Sequential, Relative, Direct Access, Indexed Sequential Files), Multi key Files, File Systems, Primitive Operations on Files (Open/ Close, Read/ Write Next, Read_Direct, Write_Direct, Update , Append, Allocate, Deallocate	4	8
	10	<b>Direct File Organisation:</b> Introduction, Hashing Function, Properties of good Hashing Function, Different types of Hashing Functions, Primitive Operations on Direct Files, File Functions	4	8
		Total	50	100

**Text Books:**

1. S. Sawhney & E. Horowitz, "Fundamentals Of Data Structure", , Computer Science Press, 1987

**References:**

1. Trembley & Sorrenson "Data Structure", 2005
2. Lipschuists, "Data Structure", (Schaum's Outline Series Mcgraw Hill Publication)
3. Ellis Horowitz And Sartaj Sawhney "Fundamentals Of Computer Algorithm"
4. Aho, Hopcroft And Lulman, "Data Structures And Algorithms"
5. Abhay Abhyankar, "Data Structures And Files"
6. G.S. Baluja "Data Structures Through C"
7. Mary Loomis, "Data Management And File Structures", Prentice Hall; 2 Sub edition (January 1989)