

Content	Lecture	Assignment	lab	Presentation
1. Introductions to Data Structure and Algorithm a. Data Structure, ADT, Atomic and Composite b. Algorithms, Time & Space Complexity c. Pseudo code	4			
2. Stacks a. Basics concept of Stack, Stack ADT, Stack operations, Stack application b. Conversion from infix to postfix/prefix expression, evaluation of postfix/ prefix	4	1	2	1
3. Queue a. Basics concept of Queue, Queue as ADT, primitive operation b. Linear Queue, Priority Queue, Circular Queue Application of Queue	5	1	2	1
4. Linear list a. Basics Concept of List, linked list, ADT b. Types of Linked List: Singly Linked List, Double Linked List and Circular Linked List c. Basic Operation in Linked List: Node Creation, Insertion and Deletion at Beginning, End, and Intermediate Position	8	1	2	1
5. Recursion a. Principle of Recursion, Comparison between Recursion vs. Iteration b. Factorial, Fibonacci, GCD, Tower of Hanoi	4	1	1	1
6. Sorting a. General Concept, Internal and External Sort b. Sorting Algorithm: Bubble sort, Selection, and insertion sort	6	1	3	1

c. Divide and Conquer Sort: Merge sort				
1. Graphs and Tree <ul style="list-style-type: none"> a. Concept and Representation of Graphs, Graphs Traversal, Minimum Spanning Tree: Kruskal Algorithm b. Shortest Path Algorithm: Dijkstra's Algorithm c. Definition of Tree, Tree Height, Level and Depth, Basic Operation in Binary Tree d. Tree Traversals, Binary Search Tree, AVL Tree, Application of Tree 	8	1	2	1
1. Searching and Hashing <ul style="list-style-type: none"> a. Definition of Searching, Search Algorithm: Sequential and Binary Search b. Concept of Hash: Hash function, Hash tables, Collision Resolution techniques 	6	1	3	1