

Course: - MSC(CS)
Sub Code: 2MSC(CS)1

Semester: II
Subject Name- Data Structure and Algorithms using C

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
UNIT-I Introduction to Data Structures, Abstract Data Types Stacks - Introduction to Stack & Primitive Operation on Stack, Stack's Applications - Infix, Postfix & Prefix Expressions, Recursion, Multiple Stacks Queues -Introduction to Queues, Primitive Operations on Queues, Circular Queue, Dequeue, Priority Queue.	8					8	
UNIT-II Linked List - Introduction to Linked List, Memory Representation of Linked List, Operations on Linked List, Linked List Representation of Stack and Queue, Header Nodes. Types of Linked List - Doubly Linked List, Circular Linked List, Application of Linked List.	8					8	
UNIT-III Trees - Basic Terminology of Trees, Binary Trees, Tree Representations as Array & Linked List. Binary Tree Representation. Traversal of Binary trees - Inorder, Preorder & Postorder, Application of Binary Tree, Threaded Binary Tree, Balanced tree, AVL tree, B-tree	8					8	
UNIT-IV Analysis of Algorithm, Complexity with Big'O' Notation. Searching - Sequential Search, Binary Search and their Comparison. Sorting - External & Internal Sorting, Insertion Sort, Selection Sort, Quick Sort, Bubble Sort, Heap Sort, Comparison of Sorting Methods. Hashing, Collision Resolution Techniques.	8					8	
UNIT-V Graphs - Introduction to Graphs, Basic Terminology, Directed, Undirected & Weighted Graph, Representation of Graphs, Warshall's Algorithm for Path Matrix, Graph Traversals - Depth First & Breadth First Search. Spanning Trees, Minimum Spanning Tree, The Basic Greedy Strategy for Computing, Algorithm of Kruskal and Prim. Applications of Graphs : Shortest Path Problem using Dijkstra Method.	8					8	
TEXT & REFERENCE BOOKS:							
<ul style="list-style-type: none"> • <i>FUNDAMENTALS OF DATA STRUCTURE, BY S. SAWHNEY & E. HOROWITZ</i> • <i>DATA STRUCTURE: BY T REMBLEY & SORRENSON</i> • <i>DATA STRUCTURE: BY LIPSCHUISTS (SCHAUM 'S OUTLINE SERIES MCGRAW HILL PUBLICATION)</i> • <i>FUNDAMENTALS OF COMPUTER ALGORITHM: BY ELLIS HOROWITZ AND SARTAJ SAWHNEY</i> 							