Name of the Programme: MCA
Course Code: CSA-504
Title of Course: Data Structures & Algorithms Lab
Number of Credits: 2 (0L-0T-2P)
Effective from AY: 2022-23

Prerequisites for the course	Programing Knowledge	
Objectives	To develop skills to design and implement linear and nonlinear data structures and to identify the most appropriate data structure for solving a real world problem.	
Content	**Lab Assignments may be based on the following** Advanced Linear Data Structures Infix-to-Postfix conversion, Evaluating Postfix Expressions, Bracket Matching Non-linear data structures Binary Trees Tree Traversal Algorithms Binary Search Trees Heap Priority Queue using Heap Heap Sort Graph implementation using Adjacency list and matrix Graph Traversal Algorithms Divide & Conquer Strategy MergeSort QuickSort Binary Search Algorithm Greedy Algorithms Huffman Coding Algorithm Prims' and Kruskal's Algorithm Dijkstra's Algorithm Dynamic Programming Coin Change Problem Longest Common Subsequence Floyd-Warshall Algorithm A Mini Project	8hours 20hours 12hours 12hours 8hours
Pedagogy	Programming assignments/ discussions/ self-review/ peer-review/ testing of code/ debugging of code/ projects	
References/ Readings	1. Horowitz, Ellis, Sartaj Sahni, and Susan Anderson-Freed. "Fundamentals of data structures in C" WH Freeman & Co., Latest edition. 2. Thomas H. Cormen, Charles E. Leiserson, et al "Introduction to Algorithms", Latest Edition 3. Allen, Weiss Mark. "Data structures and algorithm analysis in C." Pearson Education India, Latest Edition. 4. Dasgupta, Papadimitriou, and Vazirani, "Algorithms" McGraw-Hill. 2017	
Course Outcomes	Upon successful completion of the course, a student will be able to ● Implement common data structures such as lists, stacks, queues, graphs, and binary trees for solving programming problems. ● Identify and use appropriate data structures in the context of a solution to a given problem.	

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