Cochin University of Science and Technology
Department of Computer Science
Integrated M.Sc in Computer Science (AI & DS)
21-805-0306:Lab 5-Algorithms Lab
semester-3

Lab cycle 1				
Sl no	**Question**	**Hours**	**Course outcome**	**Cognitive level**
1	Sort a given set of elements using the Quicksort method Determine the time required to sort the elements. Repeat the experiment for different values of n, the number of elements in the list to be sorted and plot a graph of the time taken versus n. The elements can be read from a file or can be generated using the random number generator.	2	CO1,CO2	L3
2	Print all the nodes reachable from a given starting node in a digraph using BFS method	2	CO1,CO2	L3
3	Check whether a given graph is connected or not using DFS method	2	CO1,CO2	L3
4	From a given vertex in a weighted connected graph, find shortest paths to other vertices using Dijkstra's algorithm	2	CO1,CO2	L3
5	Implement All-Pairs Shortest Paths Problem using Floyd's algorithm.	2	CO1,CO2	L3
Lab cycle 2				
Sl no	**Question**	**Hours**	**Course outcome**	**Cognitive level**
1	implement Bellman Ford’s Algorithm.	2	CO1,CO2	L3

2	Compute the transitive closure of a given directed graph using Warshall's algorithm	2	CO1,CO2	L3
3	Find Minimum Cost Spanning Tree of a given undirected graph using Kruskal's algorithm	2	CO1,CO2	L3
4	Find Minimum Cost Spanning Tree of a given undirected graph using Prim’s algorithm.	2	CO1,CO2	L3
5	Obtain the Topological ordering of vertices in a given digraph	2	CO1,CO2	L3
Lab cycle 3				
Sl no	**Question**	**Hours**	**Course outcome**	**Cognitive level**
1	Implement matrix chain multiplication using dynamic programming	2	CO1,CO2	L3
2	Implement 0/1 Knapsack problem using Dynamic Programming	2	CO1,CO2	L3
3	Implement Huffman coding using Greedy algorithm	2	CO1,CO2	L3
4	Implement N Queens problem using Backtracking	2	CO1,CO2	L3
5	Implement any scheme to find the optimal solution for the Traveling Sales Person problem and then solve the same problem instance using any approximation algorithm and determine the error in the approximation.	2	CO1,CO2	L3