

Analysis & Design of Algorithms Lab		Semester	4
Course Code	BCDL404	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	0:0:2:0	SEE Marks	50
Credits	01	Exam Hours	2
Examination type (SEE)	Practical		
<b>Course objectives:</b>			
<ul style="list-style-type: none"> <li>● To design and implement various algorithms in C/C++ programming using suitable development tools to address different computational challenges.</li> <li>● To apply diverse design strategies for effective problem-solving.</li> <li>● To Measure and compare the performance of different algorithms to determine their efficiency and suitability for specific tasks.</li> </ul>			
<b>Sl.No</b>	<b>Experiments</b>		
1	Design and implement C/C++ Program to find Minimum Cost Spanning Tree of a given connected undirected graph using Kruskal's algorithm.		
2	Design and implement C/C++ Program to find Minimum Cost Spanning Tree of a given connected undirected graph using Prim's algorithm.		
3	a. Design and implement C/C++ Program to solve All-Pairs Shortest Paths problem using Floyd's algorithm. b. Design and implement C/C++ Program to find the transitive closure using Warshal's algorithm.		
4	Design and implement C/C++ Program to find shortest paths from a given vertex in a weighted connected graph to other vertices using Dijkstra's algorithm.		
5	Design and implement C/C++ Program to obtain the Topological ordering of vertices in a given digraph.		
6	Design and implement C/C++ Program to solve 0/1 Knapsack problem using Dynamic Programming method.		
7	Design and implement C/C++ Program to solve discrete Knapsack and continuous Knapsack problems using greedy approximation method.		
8	Design and implement C/C++ Program to find a subset of a given set $S = \{s_1, s_2, \dots, s_n\}$ of $n$ positive integers whose sum is equal to a given positive integer $d$ .		
9	Design and implement C/C++ Program to sort a given set of $n$ integer elements using Selection Sort method and compute its time complexity. Run the program for varied values of $n > 5000$ and record the time taken to sort. 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.		
10	Design and implement C/C++ Program to sort a given set of $n$ integer elements using Quick Sort method and compute its time complexity. Run the program for varied values of $n > 5000$ and record the time taken to sort. 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.		
11	Design and implement C/C++ Program to sort a given set of $n$ integer elements using Merge Sort method and compute its time complexity. Run the program for varied values of $n > 5000$ , and record the time taken to sort. 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.		
12	Design and implement C/C++ Program for N Queen's problem using Backtracking.		

