

DESIGN AND ANALYSIS OF ALGORITHMS LAB**Course Code: CSE 323****Credit Unit: 01****Total Hours: 30****Course Objective:**

Ability to write programs in java to solve problems using algorithm design techniques such as Divide and Conquer, Greedy, Dynamic programming, and Backtracking.

SOFTWARE REQUIREMENTS: any programming IDE

Course Contents :

Lab Experiments are based on the course Design and Analysis of Algorithms (CSE 303)

List of experiments/demonstrations:

1. Write a program to implement Quick sort algorithm for sorting a list of integers in ascending order: **(3 Hours)**
2. Write a program to implement Merge sort algorithm for sorting a list of integers in ascending order: **(3 Hours)**
3. i) Write a program to implement the DFS algorithm for a graph.
ii) Write a program to implement the BFS algorithm for a graph. : **(3 Hours)**
4. Write a programs to implement backtracking algorithm for the N-queens problem. : **(3 Hours)**
5. Write a program to implement the backtracking algorithm for the sum of subsets problem. : **(3 Hours)**
6. Write a program to implement the backtracking algorithm for the Hamiltonian Circuits problem. : **(3 Hours)**
7. Write a program to implement greedy algorithm for job sequencing with deadlines. : **(3 Hours)**
8. Write a program to implement Dijkstra's algorithm for the Single source shortest path problem. : **(3 Hours)**
9. Write a program that implements Prim's algorithm to generate minimum cost spanning tree. : **(3 Hours)**
10. Write a program that implements Kruskal's algorithm to generate minimum cost spanning tree : **(2 Hours)**
11. Write a program to implement Dynamic Programming algorithm for the 0/1 Knapsack. : **(1 Hours)**

Course Outcomes:

- To write programs to solve problems using divide and conquer strategy.
- To write programs to solve problems using backtracking strategy.
- To write programs to solve problems using greedy and dynamic programming techniques

Examination Scheme:

IA			EE			
A	PR	Practical Based Test	Major Experiment	Minor Experiment	LR	Viva
5	10	15	35	15	10	10

Note: IA –Internal Assessment, EE- External Exam, A- Attendance PR- Performance, LR – Lab Record, V – Viva.

Text & References:

- Algorithm Design, Jon Kleinberg and Eva Tardos, Pearson Education.
- Introduction to Algorithms: A Creative Approach, Udi Manber, Pearson Education.
- Data structures with C++, John R. Hubbard, Schaum's Outlines, TMH.
- Data structures and algorithms in Java, 2nd Edition, R. Lafore, Pearson Education.
- Data Structures using C++, D S Malik, Cengage Learning.