

Course No.	Course Name	L-T-P - Credits	Year of Introduction
IT234	Algorithm Design Lab	0-0-3-1	2016

List of Exercises/Experiments :

1. Time Space Trade off implementation
2. Time analysis of different Sorting and Searching Methods.
3. String matching algorithms
4. Graphs traversal using Adjacency List and Adjacency Matrix.
5. Shortest path using Dijkstra's algorithm
6. Implement minimum spanning tree algorithms – Prim's and Kruskal's
7. Dynamic Programming implementation
8. Backtracking method implementation

Sample Lab cycle

- **An experiment to understand the concept of time space trade off**

- **Sorting**

Sorting Time Calculation for 10, 100, 1K, 10K, 100K numbers by varying input patterns. Create three set of input files. i) Sorted Numbers, ii) Reverse Sorted iii) Random Numbers. Plot the graph with input size & time for

Bubble Sort, Insertion Sort, Selection Sort, Quick Sort Vs Randomized Quick Sort, Merge Sort, Heap Sort, by creating a Binary Search Tree, by creating an AVL tree

- **Searching**

Searching Time Calculation for 10, 100, 1K, 10K, 100K numbers by varying input patterns. Plot the graph with input size & time

Sequential Search; Binary Search; Interpolation Search

- **String Matching**

Trivial String Matching ; Rabin- Karp Algorithm

- **Graph Algorithms**

Connected component finding using Adjacency list and Adjacency matrix;
Find shortest path between given source and destination using Dijkstra's algorithm;
Find minimum spanning tree using Kruskal's algorithm;
Find minimum spanning tree using Prim's algorithm

- **Dynamic Programming**

Find optimal ordering of matrix multiplication

- **Backtracking**

8 Queens Problem