# CAP539:ALGORITHM DESIGN AND ANALYSIS - LABORATORY

L:0 T:0 P:2 Credits:1

**Course Outcomes:** Through this course students should be able to

CO1 :: understand the need of different algorithm design techniques

CO2 :: apply specific algorithms for solving a number of computational problems like sorting, searching, shortest-path and graph problems

CO3 :: analyze the asymptotic performance of algorithms

CO4 :: design and implement algorithms by using divide and conquer, greedy approach, dynamic programming and backtracking

**List of Practicals / Experiments:**

**Searching & Sorting**

- Binary Search
- Merge Sort
- Quick Sort
- Selection Sort
- Bubble Sort
- Sequential Search

**Shortest Paths**

- Single Source Shortest Paths algorithm
- All Pair Shortest Paths algorithm

**Minimum Spanning Tree**

- Prim's algorithm
- Kruskal's algorithm

**Backtracking**

- 8-Queens Problem

**Pattern matching algorithms**

- Brute Force algorithm
- Knuth-Morris-Pratt algorithm
- Boyer Moore algorithm

**Text Books:**

1. FUNDAMENTALS OF COMPUTER ALGORITHMS by E. HOROWITZ AND S. SAHANI, GALGOTIA PUBLICATIONS

**References:**

1. DESIGN AND ANALYSIS OF ALGORITHMS by HIMANSHU B. DAVE, PEARSON

2. DESIGN & ANALYSIS OF ALGORITHMS by R.C.T. LEE, MCGRAW HILL EDUCATION

3. DESIGN AND ANALYSIS OF COMPUTER ALGORITHMS by JOHN E. HOPCROFT, ADDISON-WESLEY