

Course Name: Design and Analysis of Algorithms

Course Code: PGICT20C101

Core Credits: (4)

Unit 1:

Introduction to Algorithms, Analysis of algorithms, Designing Algorithms, Growth of Functions, Asymptotic notations, Recurrences-Solving Recurrence Relations, Substitution method, The Master Method, Time and Space Complexity study of some basic algorithms.

Unit 2:

Randomized Algorithms: Identifying the repeated element, Advantages and Disadvantages. Divide and Conquer, General method, Binary search, Finding Max and Min, Quick sort. Greedy Method, General method, Knapsack problem, Job Sequencing with Deadlines, Single source shortest paths.

Unit 3:

Dynamic programming, General methods, Multistage Graphs, All pair shortest paths, Traveling salesperson problems. Backtracking, General method, 8-Queen problem, Sum of subsets, Knapsack problem.

Unit 4:

Branch and Bound, General method, Least Cost Branch and Bound, Traveling salesperson problem.0/1 Knapsack Problem. Concept of P and NP, Concept of NP Hard and NP Complete problems

Recommended Books

- 1) Cormen, Leiserson, Rivest, Stein, "Introduction to Algorithms", 2nd edition, PHI.
- 2) Aho, Hopcroft and Ullman, "The Design and Analysis of Computer Algorithms", Pearson
- 3) Horowitz, Sahni, "Fundamentals of Computer Algorithms", Galgotia Publications