



STANLEY
COLLEGE OF ENGINEERING & TECHNOLOGY FOR WOMEN
(Approved by AICTE , New Delhi | Affiliated to Osmania University ,Hyderabad)
Address : Chapel Road, Abids ,Hyderabad

CS-501

ADVANCED ALGORITHMS

UNIT-I

Algorithm Analysis: Asymptotic Notation ,Amortization.

Basic Data Structures: Stacks and Queues, Vectors, Lists and Sequences, Trees, Priority Queues, Heaps, Dictionaries and Hash Tables.

Search Trees : Ordered Dictionaries and Binary Search Trees, AVL Trees, Bounded-Depth Search Trees, Splay Trees.

UNIT-II

Fundamental Techniques: The Greedy Methods, Divide-and-conquer, Dynamic Programming.

Graphs: The Graph Abstract Data Type, Data Structures for Graphs, Graph Traversal, Directed Graphs.

UNIT-III

Weighted Graphs: Single-Source Shortest Paths, All-Pairs Shortest Paths, Minimum Spanning Trees.

Network Flow and Matching: Flows and Cuts, Maximum Bipartite Matching, Minimum-Cost Flow.

UNIT-IV

Text Processing: Strings and Pattern Matching Algorithms, Tries, Text Compression, Text Similarity **Testing.**

Number Theory and Cryptography: Fundamental Algorithms involving numbers, Cryptographic Computations, Information Security Algorithms and Protocols.

UNIT-V

Computational Geometry: Range Trees, Priority Search Trees, Quad trees and k-D Trees, Convex Hulls.

Suggested Reading:

1. M T Goodrich, R Tomassia. "Algorithm Design – Foundations, Analysis, and Internet Algorithms", John Wiley,2002.
2. E Horowitz S Salmi, S Rajasekaran, "Fundamentals of Computer Algorithms", Second Edition,university Press,2007.
3. Aho, A V Hopcraft, Ullman J D, "The design and analysis of Computer Algorithms", Pearson Education, 2007.
4. Hari Mohan Pandy, "Design Analysis and Algorithms", University Science Press, 2009.
5. Cormen., Lieserson, Rivest "Introduction to Algorithm", 2nd Edition, PHI,2003.