

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Semester: 1 Computer Engineering

Subject Name Computer Algorithm

Sr.No	Course content
1	Introduction: Algorithms; analysis and design of algorithms, Type of recurrences.
2	Sorting, Order Statistics and Data Structures: Heap sort; sorting in linear time; medians and other statistics; red-black trees; augmenting data structures.
3	Advanced Data Structures: B-trees; binomial heaps; Fibonacci heaps; Data structures for disjoint sets.
4	Advanced Design and Analysis Techniques: Dynamic programming; greedy algorithms; amortized analysis; probabilistic algorithms; binary search and traversal techniques.
5	Graph Algorithms: Elementary graph algorithms; Minimum spanning trees; Single source shortest paths; All- pairs shortest paths; Maximum flow; Backtracking; Topological sorting.
6	Algorithms for Common Applications: Sorting networks; Algorithms for parallel computers; Approximation algorithms; Heuristic algorithms String matching.
7	Algebraic Simplifications and Transformations: NP-Hard and NP-Complete problems.

Reference Books:

1. Computer Algorithms by Cormen MIT Press
2. Design and Analysis of Computer Algorithms by Aho, Hopcroft and Ullman, Pearson
3. The Algorithm Design Manual By Steve s. Skiena