

Course Name: **MTech Exec (CS) 1st Semester**

Subject Code: **CS-6418**

Subject Name: **Advanced Database Management Systems**

Aim of the Subject

The aim of the course is to make students able to handle large database system (corporate database) and to be able to manipulate it efficiently.

Learning Outcomes

The students are expected to learn following after completion of the course:

- To write complex queries including joins and able to apply normalization.
 - To design optimized queries and apply indexing and hashing concepts.
 - To the design and implement object oriented databases.
 - To the design and implement parallel and distributed databases.
 - To apply data mining and data warehousing concepts in real world applications.
-

Unit 1

Unit 2

Unit 3

Unit 4

Unit 5

Text Book(s)

Reference Material(s)

Course Name: **MTech Exec (CS) 1st Semester**

Subject Code: **CS-6221**

Subject Name: **Advanced Algorithm Design**

Aim of the Subject

The aim of the course is to make students learn & apply algorithmic techniques in problem solving.

Learning Outcomes

The students are expected to learn following after completion of the course:

- The students are expected to learn the following after completion of the course: Algorithm design strategies such as dynamic programming and greedy strategy.
 - Design and implement various graph algorithms.
 - Approximation algorithms for various NP hard problems.
 - Analyze time complexity and space complexity.
-

Unit 1

Introduction to Algorithms, Time & Space Complexity, Sorting: Merge Sort, Quick Sort, Heap Sort; Searching: Linear Search, Binary Search, Hashing.

Unit 2

Introduction to Algorithms, Time & Space Complexity, Sorting: Merge Sort, Quick Sort, Heap Sort; Searching: Linear Search, Binary Search, Hashing.

Unit 3

Graph Algorithms, Traversal: BFS, DFS; Shortest Path: Dijkstra's Shortest Path Algorithm; Computation of Minimum Spanning Trees: Prim Algorithm, Kruskal Algorithm

Unit 4

String Matching Algorithms: Naive Algorithm, KMP Algorithm, Rabin-Karp Algorithm

Unit 5

Theory of NP Complete Problems, P, NP, NP Hard, NP Complete and related Reductions, Cook's Theorem.

Text Book(s)

[1] Introduction to Algorithms, by Cormen, Leiserson, Rivest, and Stein, MIT Press, Third Edition, 2009. [CLRS]

Reference Material(s)

[1] Algorithms, by Dasgupta, Papadimitrou and Vazirani, McGraw Hill Education, 2006.