

I Year I Semester
Code: 17CS101

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ADVANCED DATA STRUCTURES AND ALGORITHM ANALYSIS

UNIT-I:

Introduction to Data Structures, Singly Linked Lists, Doubly Linked Lists, Circular Lists- Algorithms. Stacks and Queues: Algorithm Implementation using Linked Lists.

UNIT-II:

Searching-Linear and Binary Search Methods. Sorting-Bubble Sort, Selection Sort, Insertion Sort, Quick Sort, Merge Sort. Trees –Binary trees, Properties, Representation and Traversals (DFT,BFT), Expression Trees (Infix, prefix, postfix). Graphs-Basic Concepts, Storage Structures and Traversals.

UNIT-III:

Dictionaries, ADT, The List ADT, Stack ADT, Queue ADT, Hash Table Representation, Hash Functions, Collision Resolution-Separate Chaining, Open Addressing-Linear Probing, Double Hashing.

UNIT-IV:

Priority queues-Definition, ADT, Realising a Priority Queue Using Heaps, Definition, Insertion, Deletion .Search Trees- Binary Search Trees, Definition, ADT, Implementation, Operations- Searching, Insertion, and Deletion.

UNIT-V:

Search Trees- AVL Trees, Definition, Height of AVL Tree, Operations, Insertion, Deletion and Searching. Search Trees-Introduction to Red-Black and Splay Trees, B-Trees, Height of B-Tree, Insertion, Deletion and Searching, Comparison of Search Trees.

TEXTBOOKS:

1. Data Structures: APseudocode Approach, 2/e, RichardF.Gilberg, BehrouzA.Forouzon, Cengage.
2. Data Structures, Algorithms and Applications in java, 2/e, Sartaj Sahni, University Press.

REFERENCESBOOKS:

1. Data Structures And Algorithm Analysis, 2/e, Mark Allen Weiss, Pearson.
2. Data Structures And Algorithms, 3/e, Adam Drozdek, Cengage.
3. C and Data Structures: A Snap Shot Oriented Treatise Using Live Engineering Examples, N.B.Venkateswarulu, E.V.Prasad, S Chand & Co, 2009.