

CSHT 203 Data Structures (60 Lectures)

Introduction: Abstract Data Types, Arrays- Single and Multidimensional arrays, Sparse matrices.

Linear structures: Stacks, Queues (linear as well as circular implementation), single, double, and circular linked lists -- Operations and applications.

Recursion: Problem solving using recursion, run time stack in recursion, tail recursion, and its removal.

Searching techniques: Linear search, Binary search and their efficiency, Skip Lists, Hashing.

Tree Structures: Trees, Binary Trees, Complete Binary trees and almost complete Binary trees, binary search trees, Insertion, Deletion, Tree traversal algorithms, Threaded trees (recursive as well as Non recursive), applications of trees. Multiway trees – B-Trees and introduction to B+ Trees.

Recommended Books:

1. A. Drozdek, Data Structures and algorithm in C++, 3rd Edition, Course Technology 2004.
2. Data Structures using C and C++, Tannenbaum, 2nd edition ** 1995
3. Data Structures and Algorithms in C++. Publication John Wiley 2003
4. S. Sahni, Data Structures, Algorithms and applications in C++, Publication Silicon Press 2004
5. B.R. Preiss, Data structures and algorithms with object oriented design patterns in C++, John Wiley and sons, 1998.