DATA STRUCTURES
(Common to CSE & IT)

Course Code: 15CT1105

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Course Outcomes:

At the end of the course, a student will be able to

CO 1 Apply concepts of stacks and queues.

CO 2 Apply concepts of linked lists..

CO 3 Develop programs for searching and sorting.

CO 4 Develop programs using concepts of trees.

CO 5 Apply concepts of graphs

UNIT-I **(10Lectures)**

STACKS:

Introduction, stack operations, applications.

QUEUES:

Introduction, Operationsonqueues, circularqueues, Priorityqueues, applications.

UNIT-II **(10Lectures)**

LINKEDLISTS:

Introduction, Singly linked lists, circular linked lists, doubly linked lists, multiple linked lists, applications.

LINKED STACKS AND LINKED QUEUES:

Introduction, operations on linked stacks and linked queues, dynamic memory management, implementation of linked representations, applications.

UNIT-III **(10Lectures)**

SEARCHING:

Introduction, linear search, transpose sequential search, interpolation search, binary search, Fibonacci search.

INTERNAL SORTING:

Introduction, bubble sort, insertion sort, selection sort, merge sort, quick sort.

UNIT-IV (10Lectures)

TREES AND BINARY TREES:

Introduction, Trees: definition and basic terminologies, representation of trees. Binary trees: basic terminologies and types, representation of binary trees, binary tree traversals, applications.

BINARY SEARCH TREES AND AVL TREES:

Introduction, binary search trees: definition and operations, AVL Trees: definition and operations, applications.

UNIT-V (10Lectures)

GRAPHS:

Introduction, definitions and basic terminologies, representations of graphs, graph traversals and applications.

TEXTBOOKS:

1. 1.G.A.V PAI, *Data Structures and Algorithms, Concepts, TechniquesandApplications*,Volume1,1stEdition,Tata McGraw-Hill,2008.
2. Richard F. Gilberg & Behrouz A. Forouzan, *Data Structures, Pseudo code Approach with C*, 2ndEdition, Cengage Learning India Edition, 2007.

REFERENCES:

1. Langsam,M. J. Augenstein, A. M. Tanenbaum, *Datastructures using C and C++*, 2nd Edition, PHI Education, 2008.
2. Sartaj Sahni, Ellis Horowitz ,Fundamentals of at a Structures in C, 2nd Edition, Orientblackswan, 2010.

WEB REFERENCES:

http://nptel.iitm.ac.in/video.php?subjectId=106105085.