

BSc (IT)

DSC-5: Fundamentals of Data Structures

(LTP::4:0:2)

6 Credits

Unit-1

Basic data structure : Primitive datastructure: Integer, Real, Character, String, Pointer and their representations and Operations. Fixed point and floating point representation of real numbers. Introduction to Non primitive data structures. Arrays – one, two and multi dimensional array representation.

Unit-2

Stack – Operations, Applications – Recursion, infix to postfix conversion, evaluation of postfix expression, algorithm designs.

Queues – Operations, Applications, circular queue-Operations, Dequeue, priority queue – uses of priority queues, algorithm designs.

Problems associated with stack and queues.

Unit 3

Linked list – Concept of Dynamic memory allocation, Singly linked list – Operations, Circular linked list – Operations, Applications of linked list, doubly linked list – memory representation.

Unit-4

Tree – Terminologies, tree properties, binary tree-properties, memory representation – Array and Linked list representation, Binary search tree. Tree traversal techniques, algorithm designs.

Books Recommended

1. M.T. Goodrich, R. Tamassia and D. Mount, *Data Structures and Algorithms in C++*, John Wiley and Sons, Inc., 2004.
2. T.H. Cormen, C.E. Leiserson, R.L. Rivest and C. Stein, *Introduction to Algorithms*, 2nd Ed. Prentice-Hall of India, 2006.
3. E.Horowitz and S.Sahani, *Fundamentals of Data structures*, Galgotia Book source Pvt. Ltd., 2003