IT111 DATA STRUCTURE-I 3-1-0

COURSE CONTENT:

Basic Concept: Data Structure and algorithm preliminaries: Definitions; Data types, Time and Space analysis of Algorithms; Time and space trade-off, Pointers and dynamic memory allocation; Recursion.

Arrays and Structure: Concepts of Linear Search, Binary Search, Evaluation of Polynomial, Polynomial representation, Polynomial Addition, Structures: Internal representation of structure, Self–referential structure, Array: Definitions of Arrays and Lists, Strings, Row/Column major representation of Arrays.

Stack and Queues: Introduction to Stack, Static and Dynamic Representation, Operation, Application of Stack, Evaluation of Expression, postfix expression, Infix, prefix, Queue, Static and Dynamic Representation, Operation, Priority Queue, Circular Queue.

Linked List and Trees: Introduction to Linked List: Singly linked list, circular linked list, doubly linked list, operations on linked list, Introduction to Tree: Definition, Terminology, Generalised tree representation, Binary tree - definitions and properties, Representation, Binary Tree Traversal In-order, Pre-order, Post- order, Introduction to Binary Search Tree.

Graphs; Searching & Sorting: Introduction to Graphs: Representation, Adjacency Matrix and List, Indegree, out degree of Graph, Graphs Operation, DFS & BFS, Spanning Tree, Shortest path. Searching and Sorting Methods: Various Searching and Sorting algorithms with complexity analysis.

EVALUATION

Evaluation will be continuous an integral part of the class followed by final examination.

REFERENCES

E Balagurusamy, Data Structures Using C, Tata McGraw Hill Education
Achuthsankar S. Nair & T. Mahalekshmi, Data Structures in C, PHI R. Venkatesan & S. Lovelyn Rose, Data Structures, Wiley India Rajesh K. Shukla, Data Structures Using C & C++, Wiley India
Langsam, Augenstein &Tenenbaum, Data Structures Using C & C++, Pearson
Dharmender Singh Kushwaha & Arun Kumar Mishra Data Structures: A Programming Approach with C, PHI
Tenebaum, Langsam & Augenstein, Data Structures Using C, Pearson