INTRODUCTION TO PROGRAMMING AND DATA STRUCTURE

Module I (8hrs)

Introduction to Computers; Algorithms and flowcharts; Introduction to Programming – types of programming languages, Compilers and Interpreters; Variables, Constants, Operators, Data types; Expressions and Blocks; Input / Output statements; Conditionals and Branching statements; Iterations: while, do-while, for loops.

Module II (9hrs)

Arrays, Multidimensional arrays, Strings: String handling functions; Functions; Recursion; Dynamic storage / memory management - garbage collection and compaction; Introduction to Pointers; Structures and unions.

Module III (9hrs)

Introduction to data structures: storage structure for arrays, sparse matrices; Stacks and Queues: representation and application. Infix to Post fix conversion, postfix expression evaluation using stacks; Linked lists: Single linked lists, linked list representation of Stacks and Queues. Operations on polynomials, Double linked list, Circular list.

Module IV (9hrs)

Trees: Tree terminology, General tree, Binary tree, Binary search tree, Complete Binary Tree representation, Tree traversals, operation on Binary tree - expression trees, AVL Tree, B+ tree.

Text Books:

1. Balagurusamy : "C Programming" Tata McGraw-Hill
2. P. Dey & M. Ghosh, "Computer Fundamental & Programming in C"- Oxford University Press
3. Deitel -"C How to Programme" PHI publication/ Pearson Publication

Reference Books:

1. Y. Kanitkar - "Let us C" BPB Publisher
2. H. Schildt - "C The Complete Reference" McGraw-Hill
3. Schaum Series- "C Programming" - Gotterfried