

## **Computer Programming and Data Structures 2(0+2)**

### **Objective :-**

1. To make the students conversant on computer programming languages, specifically C language as well as to make him familiar with programming for simple agricultural engineering applications

### **Practical:-**

Introduction to high level languages; Structure programming, C programming, a simple C programming, execution of a C program, program and instruction; Familiarizing with Turbo C IDE; Building an executable version of C program; Study of different operators such as arithmetic, relational, logical, assignment, increment and decrement, conditional, bitwise and special operators, precedence of arithmetic operators; Debugging a C program; Developing and executing simple programs; Creating programs using decision making statements such as if, go to and switch; Developing program using loop statements while, do and for; Using nested control structures; Familiarizing with one and two dimensional arrays; Using string functions; Creating user defined functions; Developing structures and union; Using local, global and external variables; Using pointers; Developing linked lists in C language; Inserting an item in Linked List; Deleting an item in Linked List; Implementing Stacks; Implementing push/pop functions; Creating queues, Insertion/Deletion in queues.

### **Suggested Readings:-**

- Augenstein, L. and Tanenbaum. 2003. Data structures using C and C++. PHI/Pearson Education.
- Balagurusamy, E. 1990. Programming in 'C'. Tata McGraw Hill Publishing Co. Ltd., 12/4 Asaf Ali Road, New Delhi.
- Bronson, G. and Menconi, S. 1995. A First Book of 'C' Fundamentals of 'C' Programming. Jaico Publishing House, New Delhi.
- Drozdek, A. 2012. Data Structures and Algorithms in C++. Vikas Publishing House / Thomson International Student Edition.
- Goodrich, M T, Tamassia, R and Mount, D. 2011. Data structures and Algorithms in C++. Wiley Student Edition, John Wiley and Sons.
- Rajaraman, V. 1985. Computer Oriented Numerical Methods. Prentice Hall of India. Pvt. Ltd, New Delhi.

- Rajaraman, V. 1995. Computer Programming in 'C'. Prentice Hall of India Pvt. Ltd., New Delhi.
- Sahni, S. 2006. Data Structures, Algorithms and Applications in C++. University Press (India) Pvt. Ltd / Orient Longman Pvt. Ltd.
- Weiss, M. A. 2007. Data Structures and Algorithm Analysis in C++. Pearson Education.
- Agarwal, A. 2005. The Complete Reference Guide: Data Structure through C. ISBN: 8178840448; Publisher: Cyber Tech Publications.