

18ESCS01 - Problem Solving through Programming

Credit – 03

Contact Hours: 45

Module – 1

INTRODUCTION

8hrs

Generation and Classification of Computers- Basic Organization of a Computer –Number System – Binary – Decimal – Conversion – Problems. Need for logical analysis and thinking – Algorithm – Pseudo code – Flow Chart

Module – 2

C PROGRAMMING BASICS

10hr

Problem formulation – Problem Solving - Introduction to ‘C’ programming –fundamentals – structure of a ‘C’ program – compilation and linking processes – Constants, Variables – Data Types – Expressions using operators in ‘C’ – Managing Input and Output operations – Decision Making and Branching – Looping statements – solving simple scientific and statistical problems.

Module – 3

ARRAYS AND STRINGS

9hours

Arrays – Initialization – Declaration – One dimensional and Two dimensional arrays. String-String operations – String Arrays. Simple programs- sorting- searching – matrix operations.

Module – 4

FUNCTIONS AND POINTERS

9hours

Function – definition of function – Declaration of function – Pass by value – Pass by reference – Recursion – Pointers - Definition – Initialization – Pointers arithmetic – Pointers and arrays- Example Problems.

Module – 5

STRUCTURES AND UNIONS

9hours

Introduction – Need for structure data type – structure definition – Structure declaration – Structure within a structure - Union - Programs using structures and Unions – Storage classes, Pre-processor directives.

TEXTBOOKS:

- 1 Pradip Dey, Manas Ghosh, “Fundamentals of Computing and Programming in C”, First Edition, Oxford University Press, 2009
- 2 Ashok N. Kamthane, “Computer programming”, Pearson Education, 2007.
- 3 Yashavant P. Kanetkar. “ Let Us C”, BPB Publications, 2011.

REFERENCES:

- 1 Kernighan,B.W and Ritchie,D.M, “The C Programming language”, Second Edition, Pearson Education, 2006
- 2 Byron S Gottfried, “Programming with C”, Schaum’s Outlines, Second Edition, Tata McGraw-Hill, 2006.
- 3 R.G. Dromey, “How to Solve it by Computer”, Pearson Education, Fourth Reprint, 2007

Course Outcomes: At the end of the course, the student will be able to:

CO-1 Understand the components of computing systems, Develop algorithms for mathematical and scientific problems

- CO-2** Choose data types and structures to solve mathematical and scientific problem
- CO-3** Develop modular programs using control structures
- CO-4** Write programs to solve real world problems using programming features