C PROGRAMMING

Course Objectives

The objectives of C Programming are

- > To learn about the computer systems, computing environments, developing of a computer program and Structure of a C Program
- > To gain knowledge of the operators, selection, control statements and repetition in C
- > To learn about the design concepts of arrays, strings, enumerated structure and union types. To learn about their usage.
- ➤ To assimilate about pointers, dynamic memory allocation and know the significance of Pre-processor.
- To assimilate about File I/O and significance of functions.

Course Outcomes:

Upon the completion of the course the student will learn

- 1. To write algorithms and to draw flow charts for solving problems, so as to convert flowcharts/algorithms to C Programs, compile and debug programs
- 2. To use different operators, data types and write programs that use two-way/multi-ways election
- 3. To decompose a problem into functions and to develop modular reusable code
- 4. To design and implement programs to analyze the different pointer applications
- 5. To apply File I/ Operations

UNIT-I

Basics of C: Algorithm and Flowchart, Introduction to Computers: Creating and running Programs, Computer Numbering System, Storing Integers, Storing Real Numbers, Introduction to the C Language: Background, C Programs, Identifiers, Variable, Types, Constants, Input/output, Programming Examples, Structure of a C, Type Conversion Statements, Simple Programs.

UNIT-II

Operators and Control Statements: Operators, Operator Precedence and Associativity, Evaluating Expressions, Selection & Making Decisions: Two Way Selection, Multi way Selection, Repetition: Concept of Loop, Pretest and Post-test Loops, Initialization and Updating, Event and Counter Controlled Loops, Loopsin C, Other Statements Related to Looping, Looping Applications-Summation, Powers, Smallest and Largest, Programming Examples.

UNIT-III

Arrays &Strings: Arrays: Concepts, Using Array in C, Array Application, Two Dimensional Arrays, Multi dimensional Arrays, Programming Example—Calculate Averages Strings: String Concepts, C String, String Input / Output Functions, Arrays of Strings, String Manipulation Functions

UNIT-IV

Functions: Designing, Structured Programs, Function in C, User Defined Functions, Inter Function Communication, Standard Functions, Passing Array to Functions, Recursion. Scope, Storage Classes and Type Qualifiers.

Pointers: Introduction, Pointer stops Pointers, Compatibility, Pointer Applications: Arrays, and Pointers, Pointer Arithmetic and Arrays, Memory Allocation Function, Array of Pointers, Programming Application, Command Line Arguments.

UNIT-V

Structures, Unions, Types & Files: Derived Types: Structures-Declaration, Definition and Initialization of Structures, Accessing Structures, Nested Structures, Array of Structures, Structures and functions, Pointers to Structures, Self-referential structures, Unions, type def, bit-fields, Enumerated Types, File Handling: Defining and Opening a file ,Closing Files, Input/output Operations on Files.

Text Books:

- 1. ProgrammingforProblemSolving,BehrouzA.Forouzan,RichardF.Gilberg,CENGAGE.
- 2. The CProgramming Language, Brian W. Kernighan, Dennis M. Ritchie, 2e, Pearson.

Reference Books:

- 1. CinDepth, Srivastava Deepali, BPB Publications.
- 2. Computer Fundamentals and Programming, Sumithabha Das, McGrawHill.
- 3. Programming in C, Ashok N. Kamthane, Amit Kamthane, Pearson.
- 4. Computer Fundamentals and Programming in C,PradipDey, Manas Ghosh, OXFORD.