I Year I Semester	L	Т	Р	С
Code: 20ES1007	3	0	0	3
C PROGRAMMING				

# **Course Objectives**

The objectives of C Programming are

- 1. To learn about the computer systems, computing environments, developing of a computer program and Structure of a C Program
- 2. To gain knowledge of the operators, selection, control statements and repetition in C
- 3. To learn about the design concepts of arrays, strings, enumerated structure and union types. To learn about their usage.
- 4. To assimilate about pointers, dynamic memory allocation and know the significance of Preprocessor.
- 5. 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-way selection
- 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/O 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, Pre-test and Post-test Loops, Initialization and Updating, Event and Counter Controlled Loops, Loops in 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, Multidimensional 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, Pointers to 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, typedef, bit-fields, Enumerated Types, File Handling: Defining and Opening a file, Closing Files, Input / output Operations on Files.

### **Text Books**:

- 1. Programming for Problem Solving, BehrouzA. Forouzan, Richard F.Gilberg, CENGAGE.
- 2. The C Programming Language, BrianW.Kernighan, Dennis M.Ritchie, 2e, Pearson.

### **Reference Books**:

- 1. C in Depth, Srivastava Deepali, BPB Publications.
- 2. Computer Fundamentals and Programming, Sumithabha Das, Mc Graw Hill.
- 3. Programming in C, Ashok N. Kamthane, Amit Kamthane, Pearson.
- 4. Computer Fundamentals and Programming in C, Pradip Dey, Manas Ghosh, OXFORD.