MCPC1003 PROGRAMMING FOR PROBLEM SOLVING (3-0-0)

Course Objectives:

- To provide an understanding of basic programming concepts using the C programming language.
- To develop problem-solving skills using C programming constructs.
- To introduce students to algorithmic thinking and program design techniques.
- To enable students to write, compile, and debug programs in C.

Course Outcomes (CO):

CO1: Understand the fundamental concepts of programming using the C language.
CO2: Develop problem-solving skills through the application of programming constructs in C.
CO3: Design and implement functions and algorithms to solve complex problems.
CO4: Demonstrate proficiency in using pointers, arrays, and structures in C programming.
CO5: Apply error handling and debugging techniques to identify and resolve programming errors.
CO6: Utilize file handling mechanisms in C for input/output operations.
CO7: Appreciate the importance of data structures and their implementation in C.

Unit 1: Introduction to C Programming

Introduction to Problem Solving through programs, Flowcharts/Pseudo codes, the compilation process, Syntax and Semantic errors, Variables and Data Types , Arithmetic expressions, Relational Operations, Logical expressions; Conditional Branching and Iterative Loops.

Unit 2: Functions and Arrays

Introduction to Functions, Function Prototypes and Declarations, Parameter Passing in Functions, Recursion, Arrays: 2-D arrays, Character Arrays and Strings.

Unit 3: Pointers and Structures

Introduction to Pointers, Pointer Arithmetic, Dynamic Memory Allocation, Structures and Unions
File Handling in C, Self-Referential Structures and Introduction to Lists.

Unit 4: Advanced Concepts in C

Preprocessor Directives, Command Line Arguments, Bitwise Operators, Error Handling and Debugging Techniques, Introduction to Data Structures in C.

Textbooks:

1. Byron Gottfried, Schaum's Outline of Programming with C, McGraw-Hill
2. E. Balaguruswamy, Programming in ANSI C, Tata McGraw-Hill

Reference Books:

1. "C Programming: A Modern Approach" by K.N. King
2. Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice Hall of India
3. "Let Us C" by Yashavant Kanetkar
4. "Programming in C" by Stephen G. Kochan