1MCACC1: PROGRAMMING AND PROBLEM SOLVING USING C

Total No. of Hours: 52 **Hours/Week: 04**

Course Objective: To acquire problem solving techniques and implement in computer Programming.

Course Outcome: Students will be able to

CO1: Understand the basic concepts of programming, C compiler and problem solving through C by writing algorithms.

CO2: Familiarize with variables, operators, expressions, input and output statements.

CO3: Learn decision making statement and looping structure.

CO4: Implement programs using Arrays, Pointers Structures, Unions and Functions.

CO5: Implement file concepts and Strings in programs and executing through command prompt.

Unit I	**Introduction to Programming and Problem Solving**: The Problem solving aspect – Top-down design – Implementation of algorithm – program verification – the efficiency of algorithms – The analysis of algorithms. **Introduction to C**: Compilers and Interpreters – Structure of a C Program – Programming rules – Program execution	8 hrs
Unit II	**The C Declaration**: The C character set – Delimiters – C keywords – Identifiers –Constants - Variables – Rules for defining variables – Data types – Declaring variables – Initializing variables – Type conversion. **Operators and Expressions**: Arithmetic, Relational, Logical and Bitwise operators – Priority of operators – comma and conditional operators. **Input and Output in C**: Formatted Functions –Unformatted functions – Commonly used Library functions.	10 hrs
Unit III	**Decision Statement**: the if statement – if…else – Nested if-else statement – break – continue – go to – switch – Nested switch statement. **Loop control statement:** for loop – Nested for loop – While loop – do-while loop. **Arrays**: Array definition – initialization of array – characteristics of array – 1D and 2D array – Multidimensional array. **Strings and Standard functions**: Declaration and initialization of string – string standard functions – applications of strings.	10 hrs

Unit IV	**Functions**: Definition of functions – declaration and prototype – return statement – call by value and call by reference – function arguments – Recursion. **Pointers**: Features of pointers – pointer declaration – arithmetic operations with pointers – pointers and arrays – Pointers to pointers – Pointers to Strings. **Storage class**: Automatic variables – External variables – Static variables – Register variables. **Structure and Union**: Features of structures – declaration and initialization of structures – Nested structure – Array of structures – Pointers to structure – Structure and functions – Bit fields – Union – calling BIOS and DOS service.	12 hrs
Unit V	**Files**: Streams and File types – Steps for file operations – File I/O – Structures Read and Write – Other file functions – Errors in reading and Writing files. Command line argument.	12 hrs

REFERENCE BOOKS

[1]R.G. Dromey, "*How to solve it by Computers*", PHI

[2] Ashok N. Kamthane, *"Programming with ANSI and Turbo C"*, Pearson Education

[3]Brian Kernighan, W., Dennis Ritchie, M., "*The C Programming Language*", Prentice Hall of India Pvt. Ltd., Second Edition.

[4] Deitel and Deitel, "*C How to Program*", Pearson Education, Sixth Edition.

[5] Herbert Schildt, "*The Complete Reference C*", Tata McGraw Hill, Fourth Edition.

[6] YashwantKanetkar, "*Let Us C*", BPB Publications, Sixth Edition.