



# Marwadi University

## Bachelor of Computer Application

### Semester I (w.e.f. July, 2016)

Subject Code: 05BC0104

Subject Name: Programming using 'C'

#### Learning Objectives:

After completion of this course the student should be able to:

- 1) Introduce to the students the rudiments of structured programming using
- 2) Understand the meaning of algorithm and draw flowcharts for solving programming problems.
- 3) Learn about the data types, operators and functions in c programming
- 4) Write code in c programming language for simple problems.
- 5) Become familiar with problem solving techniques.
- 6) Learn about algorithm development as well.

#### Prerequisites:

- None

Unit	Course Content	Hours
1	<b>Program:</b> Program Definition - Program development cycle - Programming Languages - Low Level language - High Level Language - Features of a good programming language <b>Algorithm and Flow chart:</b> Introduction, examples	03
2	<b>Introduction to C :</b> History of C - Features of C Language - Structure of a C program - Execution of C Program : Compiling, Link and Run a program - Diagrammatic representation of program execution process. <b>Variables and Constants:</b> C character set - Tokens - Constants - Keywords - identifiers and Variables - Data types and storage - Data type Qualifiers - Declaration of variables - Assigning values to variables - Escape sequences - Defining symbolic constants <b>C operators :</b> Arithmetic, Logical, Assignment, Relational, Increment and Decrement, Conditional, Bit wise, Special - Operator Precedence and Associativity - C Expressions - Arithmetic expressions - Evaluation of expressions - Type conversions in expressions - Type cast operator <b>I/O statements :</b> Formatted input, formatted output, Unformatted I/O statements	06
3	<b>Branching:</b> Introduction - Simple if statement - if-else - else-if ladder, nested if-else - Switch statement - go to statement - Simple programs. <b>Looping Statements:</b> while, do-while statements, for loop, break & continue statement -- Simple programs.	06
4	<b>Arrays:</b> Declaration and initialization of One dimensional, Two dimensional and Character arrays - Accessing array elements - Programs using arrays. <b>Strings:</b> Declaration and initialization of string variables, Reading string, Writing strings - String handling functions (strlen(), strcpy(), strcat(), strcmp()) - String manipulation programs.	06



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5	<b>Functions:</b> Concept of modular programming, Using functions, Scope of data, Recursive functions, Command line arguments	03
6	<b>Pointers:</b> Understanding the Computer's Memory, Introduction to Pointers, Declaring Pointer Variables, Pointer Expressions and Pointer Arithmetic, Null Pointers, Generic Pointers, Passing Arguments to Function Using Pointers, Pointers and Arrays, Passing an Array to a Function, Difference Between Array Name and Pointer, Pointers and Strings, Array of Pointers, Pointers and 2-D Arrays, Pointers and 3-D array, Function Pointers, Array of Function Pointers, Pointers to Pointers, Memory Allocation in C Programs, Memory Usage, Dynamic Memory Allocation, Drawback of Pointers	10
7	<b>User defined data types and enumerated data types:</b> Introduction , Structure (Declaration of structure, Initialization and access of structure members , Array of structure and array within structure , Passing structure variable as an argument , Self referential structure , Nested structure , Pointer to structure) , Union ( Declaration of union , Initialization and access of union members , Array of union variables , Unions inside structures , Difference between structure and union) , typedef introduction , enum introduction	06
8	<b>Preprocessor Directives :</b> Introduction, Types of Preprocessor Directives, #define, #include, #undef, #line, Pragma Directives, Conditional Directives, #error Directive, Predefined Macro Names	04
9	<b>File Handling :</b> Introduction to Files, Using Files in C, Read Data from Files, Writing Data to Files, Detecting the End-of-File, Error Handling During File Operations, Accepting Command Line Arguments, Functions for Selecting a Record Randomly, remove(), Renaming the File, Creating a Temporary File	06

#### Reference Book(s):

1. Programming in ANSI C , 6th edition by E Balagurusamy
2. Let Us C ,13th edition by Yashavant Kanetkar
3. Head First C by David Griffiths
4. The Complete Reference, 4th edition by Herbert Schildt
5. The C Programming Language,2nd edition by Brian W. Kernighan and Dennis M. Ritchie