Course Name: Programming Concepts Using C Language **Subject Code:** TBC 101

Program Name: BCA

1 Contact Hours: 42 **L** 2 **T** 1 **P** 0

2 Examination Duration(Hrs): **Theory** 0 3 **Practical** 0 0

3 Relative Weightage: **CWE:** 25 **MTE:** 25 **ETE:** 50

4 Credits: 0 3

5 Pre-Requisite: **Knowledge of Algorithm and Flowchart**

6 Subject Area: **Programming**

7 Objective: To familiarize students with the Methodology of Programming and C language

8 Course Outcome: A student who successfully fulfills the course requirements will be able to

CO1	Understand the basic terminology used in computer programming
CO2	Understand efficient use of datatypes, control statements and operators.
CO3	Design solution of computation problems using algorithms, flowcharts and develop C programs.
CO4	Identify and locate various errors in C programs.
CO5	Organize a complex problem into less complex sub problems and develop modular application.
CO6	Implement the concept of pointers, string, arrays, structure, derived data types and other basic construct of C language

9 Details of the Course:

Unit No.	CONTENT	CONTACT HOURS
1	**Problem Solving Tools**: Algorithms: Definition, Flowcharts: Symbols, A sequential flowchart, Conditional and iterative flowchart, Control Flow Statements: Sequential, Selection – If-else, Switch-Case; Iteration, Program Design Methodologies: Top-down and bottom-up design approaches, Modular approach, History, Importance of C, Structure of C program, Data Types, primitive type and user defined type: typedef and enum, Variables and Constants, String Constant, Numeric Constant, Declaration of variables Modifiers, Identifiers and keywords, Symbolic constants; Statements & Expressions.	9
2	**Operators & Expression**: Unary operators, Arithmetic & logical operators, Bitwise operators, Assignment operators; Conditional operator, precedence and order of evaluation. Basic Input-Output Statements: formatted & unformatted input and output statements, Storage classes: automatic, external, register and	8

	static, **Decision Making, Branching and Looping** Decision making with *if* statement, The switch statement, the ?: operator, goto statement. **Loops:** while, do-while, for, Break and continue statements.	
3	**Arrays:** One-dimensional Arrays, Declaration of one-dimensional Arrays, Initialization of one-dimensional Arrays, Two-dimensional Arrays, Initializing two dimensional Arrays. Character Arrays and Strings: Declaring, writing strings to screen and reading strings from Terminal, String handling functions. **Functions:** Definition, User Defined function, Library function, Function calls: by reference and by value, Category of functions: Nesting of functions, Recursion, Passing arrays to functions, Passing strings to functions. Preprocessor directives, Macros, macro vs. function and conditional compilation, Variable number of arguments. Command line arguments.	9
4	**Pointers:** Declaring and Initialization of Pointer variables, accessing a variable through its pointer; Pointer arithmetic. **Structure**: Definition, declaration, accessing structure members, structure initialization, copying and comparing structure variables. Array's of structures, Array's within structures, nested structures, structures and functions. **Union:** definition, comparing union with a structure, Bit-Fields	8
5	**File Handling And System Calls** File Introduction, File types – Binary, Text files; Access mode, Opening and Closing files; Formatted –Unformatted input/output to files; Errors in opening files; File navigation operation-functions, System Calls Introduction: open(), close(), system(), System calls vs. library calls	8
11	**Suggested Books:**	

Sl. NO.	**NAME OF AUTHORS/BOOKS/PUBLISHERS**	**YEAR OF PUBLICATION**
1	E. Balagurusamy, "Programming in ANSI C", 8th Edition, Tata McGraw Hill.	2019
2	Yashwant Kanetkar ,"Let Us C", 15th Edition, BPB Publication.	2018
3	S.K. Srivastava, "C in Depth", 2nd Edition, BPB Publication.	2012
4	B. W. Kernighan and D. M. Ritchie, "ANSI C: The C Programming Language", 2nd Edition, Pearson Publication.	2015