CA102A1 **(3L+1T Hrs./week)**

C- PROGRAMMING

Questions to be set: 05 (All Compulsory)

Objectives: This course covers the fundamentals of computer programming and the basics of the C language. This course covers the fundamental concepts of C such as structure of a C program, variables, constants, data types, storage class, operators, expressions, predefined functions, formatted input/output, logic design and arrays as derived data types. The completion of this course will enable the learners to write programs in C language with basic commands to solve their problems of interest.

Pre-requisites: Knowledge of computers.

Course Outcome:

CO1	Explain the evolution of programming languages, types of system/application software, and the structure of a C program with historical context and significance.
CO2	Apply fundamental programming concepts such as variables, data types, constants, storage classes, and operators to develop basic C programs.
CO3	Demonstrate proficiency in using formatted and unformatted input/output functions to interact with users in C programs.
CO4	Develop programs using decision-making and looping constructs (if, switch, while, do-while, for) to solve real-life logical problems.
CO5	Implement and manipulate arrays (1D, 2D, multidimensional) and perform operations using loops and expressions for data processing tasks.

Module	Topics to be covered	Topics	Hrs
Method 1: Introduction to Programming Language with C	in class	Levels of Programming Language, Application Programs, System Programs- Operating Systems, Editor, Translator, Linker, Loader. Structured and Object-oriented Programming, Algorithms and Flowcharts. History of C, Importance of C, Basic Structure of a C Program, Sample C Programs, Programming Style, Executing a C Program.	[10]
	Assignment Topics	To be provided by the concern faculty members	
Module 2: Constants, Variables, Data Types, Operators and Expressions	in class	Introduction, Character Set, Tokens, Keywords and Identifiers, Constants, Variables, Data Types, Declaration of Variables, Declaration of Storage Class, Assigning of Storage Class, Defining Symbolic Constants, declaring a Variable as Constant, Declaring a Variable as Volatile, Overflow and Underflow of Data, Introduction, Different Categories of Operators in C Language, Arithmetic Expressions, Evaluation of Expressions, Precedence of Arithmetic Operators, Type Conversions in Expression, Operator Precedence and Associativity, Mathematical Functions.	[10]

	Assignment Topics	To be provided by the concern faculty members	
Module 3: Managing Input Output Operations	in class	Introduction, Reading a Character, Writing a Character, Formatted Input, Formatted Output.	[5]
	Assignment Topics	To be provided by the concern faculty members	
Module 4: Decision Making and Branching	in class	Introduction, Decision Making with IF Statement, Simple IF Statement, the IF---ELSE Statement, Nesting of IF---ELSE Statement, the ELSE IF Ladder, the Switch Statement, the?: Operator, the GOTO Statement, Introduction, the WHILE Statement, the DO Statement, the FOR Statement, Jumps in Loops, Concise Test Expressions.	[10]
	Assignment Topics	To be provided by the concern faculty members	
Moule 5: Arrays	in class	Introduction, One-Dimensional Array, Declaration and Initialization of 1-D Array, 2-D Array, Initialization of 2-D Array, Multidimensional Array, Dynamic Arrays.	[5]
	Assignment Topics	To be provided by the concern faculty members	

Textbooks:

1. E. Balagurusamy, Programming in ANSI C, Tata McGraw Hill.
2. Kanetkar Y., Let Us C, BPB.

Reference Books:

1. Ashok N. Kamthane, Programming with ANSI and Turbo C, Pearson Education.
2. B.S. Gottfried, Programming with C, Tata McGraw Hill
3. Kernighan and Ritchie, The C Programming, Pearson Education.
4. K. Venugopal, Mastering C, Tata McGraw Hill.