Computer Science Paper-1
Problem Solving Using Computers and 'C' Programming
[CORE COURSE]

Semester – I	Credits: 2	Subject Code: BS12001	Lectures: 40

Course Outcomes:

At the end of this course, the learner will be able to:

- Know and understand the foundation of computing, programming and problem- solving using computers.
- Illustrate the ability to analyze a problem and devise an algorithm to solve it.
- Write an algorithms, and flowcharts for arithmetic and logical problems
- Recognize structured programming approach.
- Apply the basic concepts and terminology of programming in general.
- Describe the algorithms using the 'C' language, debug and execute programs.

Unit 1: Basic concept of programming	8
• **Chapter 1: Problem Solving Using Computers** o Problem Solving o Programming Paradigms (Imperative, Declarative) o Algorithms o Pseudo code o Flowchart	5
• **Chapter 2: Introduction to C** o History o Structure of C program o Application Areas o C Program development life cycle o Program compilation and execution	3

Unit 2: Tokens	12
• **Chapter 3: C Tokens** o Keywords o Identifiers o Variables o Constants (character, integer, float, string, escape sequences) o Data types (built-in and user defined) o Operators and Expressions, Operator types (arithmetic, relational, logical, assignment, bitwise, conditional, other operators), precedence and associativity rules	12

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Unit 3: Input-output and control structures	14
• **Chapter 4: Input and Output** o Character input and output o String input and output o Formatted input and output	4
• **Chapter 5: Control Structures** o Decision making structures If, if-else, nested if, switch o Loop Control structures While, do-while, for, goto, continue statement o Nested structures o break and continue	10

Unit 4: Functions	6
• **Chapter 6: Functions in C** o Function as a building block o Advantages of Functions o Standard library functions o User defined functions: Declaration, definition, function call, parameter passing (by value), return keyword o Scope of variables, storage classes o Recursion	6

Recommended Books:

- Ajay Mitta,*Programming in C ,A Practical Approach*, 1 , Pearson
- Behrouz A. Forouzan, Richard F. Gilberg, *A Structured Programming Approach Using C*, Cengage Learning India
- Brian Kernighan, Dennis Ritchie ,*The 'C' programming language*, PHI
- B. Gottfried, *Programming with C*, , 3rd edition, Schaum's outline Series, Tata McGraw Hill.
- E. Balagurusam, *Programming in ANSI C*, 7th Edition, McGraw Hill.
- Schildt Herbert ,*C: the Complete Reference*, 4th edition, McGraw Hill.

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