23ES11T1–INTRODUCTION TO PROGRAMMING

(Common toall Branches)

Course Category:	Engineering Science	**Credits:**	3
Course Type:	Theory	**Lecture - Tutorial - Practical:**	3-0-0
Prerequisite:	Knowledge on computerfundamentals and basic mathematics.	**Sessional Evaluation:** **Univ.Exam Evaluation:** **Total Marks:**	30 70 100
Objectives	• To introduce students to the fundamentals of computer programming. • To provide hands-on experience with coding and debugging. • To foster logical thinking and problem-solving skills using programming. • To familiarize students with programming concepts such as data types, control structures, functions, and arrays. • To encourage collaborative learning and teamwork in coding projects		

Course Outcomes	A student after completion of the course will be able to	
	CO1	Describe thebasics of computers, the concept of algorithm and algorithmic thinking.
	CO2	Analyse a problem and develop an algorithm to solve it.
	CO3	Write programs for various algorithms using the C programming language.
	CO4	Summarize more advanced features of C language
	CO5	Acquire problem-solving skills and the ability to debug and optimize the code.

Course Content

UNIT - I

Introduction to Programming and Problem Solving

History of Computers, Basic organization of a computer: ALU, input-output units, memory, program counter, Introduction to Programming Languages, Basics of a Computer Program, Algorithms, flowcharts (Using Dia Tool), pseudo code. Introduction to Compilation and Execution, Primitive Data Types, Variables, and Constants, Basic Input and Output Operations, Type Conversion, and Casting.

Problem solving techniques: Algorithmic approach, characteristics of algorithm, Problem solving strategies: Top-down approach, Bottom-up approach, Time and space complexities of algorithms

UNIT - II

Control Structures: Simple sequential programs, Conditional Statements (if, if-else, switch), Loops (for, while, dowhile), Break and Continue.

UNIT - III

Arrays and Strings

Arrays indexing, memory model, programs with array of integers, two dimensional arrays, Introduction to Strings - Declaring Strings, Initializing Strings, Reading and Writing Strings, String Input / Output Functions, String Manipulation Functions.

UNIT - IV

Pointers & User Defined Data types

Pointers, dereferencing and address operators, pointer and address arithmetic, array Manipulation using pointers, User-defined data types-Structures and Unions.

	UNIT - V **Functions & File Handling** Introduction to Functions, Function Declaration and Definition, Function call Return Types and Arguments, modifying parameters inside functions using pointers, arrays as parameters. Scope and Lifetime of Variables, Basics of File Handling
Text Books and References	**Text Books:** 1. Computer Science: A structured Programming Approach using C, B AForouzan, Richard F Gilberg CENGAGE Learning, 3rd edition. 2. "The C Programming Language", Brian W. Kernighan and Dennis M. Ritchie, PrenticeHall, 1988 3. Schaum's Outline of Programming with C, Byron S Gottfried, McGraw-Hill Education, 1996
	Reference Books: 1. Computing fundamentals and C Programming, Balagurusamy, E., McGraw-Hill Education, 2008. 2. Programming in C, RemaTheraja, Oxford, 2016, 2nd edition
Web Resources	1. https://www.w3schools.com/ 2. https://www.onlinegdb.com/