

Problem Solving and Programming

Course Code	19ES1102	Year	I	Semester	I
Course Category	Engineering Sciences	Branch	CE	Course Type	Theory
Credits	4	L-T-P	3-1-0	Prerequisites	Nil
Continuous Internal Evaluation:	30	Semester End Evaluation:	70	Total Marks:	100

Course Outcomes	
Upon successful completion of the course, the student will be able to	
CO1	Develop algorithm and flowchart for simple problems.
CO2	Understand the structure, fundamentals and decision making statements in C.
CO3	Choose suitable iterative statements and arrays to solve the problems.
CO4	Solve problems using functions and pointers.
CO5	Apply the structures, unions and file operations in a specific need.

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (H:High, M: Medium, L:Low)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	M	M										L	M	M
CO2	L	L											M	M
CO3	M	M	M									L	M	M
CO4	M	M	M									L	M	M
CO5	M	M	M									L	M	M

Syllabus		
Unit No.	Contents	Mapped CO
I	Introduction to Computer Problem-Solving – Introduction, The Problem-Solving Aspect, Top-Down Design, Fundamental Algorithms – Exchanging the values of two variables, Counting, Summation of a Set of Numbers, Factorial Computation, Sine Function Computation, Generation of the Fibonacci Series. Basics of Flow charts.	CO1
II	Introduction to C: Introduction, Structure of C Program, A Simple C Program, C-Tokens, Basic Data types, Variables, Constants, Input / Output statements, Operators, Type conversion and Type casting. Conditional Branching Statements: if, if-else, if-else-if Statements and Switch case.	CO2
III	Iterative Statements: while, for and do - while loops, Nested loops, break and continue statements. Arrays: Declaration, Accessing array elements, Storing values, Operations on arrays, Multi-dimensional arrays. Strings: Introduction, String manipulation functions.	CO3
IV	Functions: Introduction, Using Functions, Function declaration, Function	CO4

	definition and Function call, Parameter passing, Passing arrays to functions, Recursion, Storage classes. Pointers: Declaration and Initialization of pointer variables, Pointer arithmetic, Pointers and arrays, Pointer to pointer, Array of pointers, Pointers and functions, Dynamic memory allocation.	
V	Structures: Introduction, Nested structures, Array of structures, Structures and functions, Unions. Files in C: Using Files in C, Read data from files, Writing data to files, Random access to files of records.	CO5

Learning Resources	
Text Books	
1. R.G. Dromey, How to Solve it by Computer, 1/e, Pearson Education, 2006. (for Unit I). 2. Reema Thareja , Programming in C, Oxford University Press, AICTE Edition, 2018.	
Reference Books	
1. B. A. Forouzan and R. F. Gilberg, Computer Science: A Structured Programming Approach Using C, 3/e, Cengage Learning, 2007. 2. Pradip Dey, Manas Ghosh, Programming in C, Oxford University Press, AICTE Edition, 3. B. Gottfried, Programming with C, 3/e, Schaum's outlines, McGraw Hill (India), 2017. 4. Jeri R. Hanly, Elliot B. Koffman, Problem Solving and Program Design in C, 5/e, Pearson.	
e- Resources & other digital material	
1. http://cprogramminglanguage.net/ 2. https://www.geeksforgeeks.org/c-programming-language/ 3. https://nptel.ac.in/courses/106105085/4	