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Department of Freshman Engineering

Programming for Problem Solving

Course Code	20ES1202	**Year**	I	**Semester**	II
Course Category	Engineering Science	**Branch**	IT	**Course Type**	Theory
Credits	3	**L-T-P**	3-0-0	**Prerequisites**	Problem Solving Techniques
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	Understand the principles of structured programming and C constructs for solving problems. (L2)
CO2	Apply suitable control constructs and array concepts to solve problems. (L3)
CO3	Apply the concept of pointers, user defined data types and files to solve problems. (L3)
CO4	Analyze the given problem and use modular programming approach to develop solutions. (L4)

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3:High, 2: Medium, 1:Low)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3												1	1
CO2	3												2	2
CO3	3												2	2
CO4		3							3	3			2	2

Syllabus		
Unit No.	Syllabus	Mapped CO's
1	**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.	CO1, CO2
2	**Iterative Statements:** while, do-while and for 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.	CO1, CO2
3	**Functions:** Introduction, Function declaration, Function definition and Function call, Types of Functions, Parameter passing, Passing arrays to functions, Recursion, Storage classes, Command line arguments.	CO1, CO4
4	**Pointers:** Declaration and Initialization of pointer variables, Pointer arithmetic, Pointers and arrays, Pointer to pointer, Array of pointers, Pointers and functions, Dynamic memory allocation. **Pre-processor directives:** The #define Directive, Undefining a Macro, Token Pasting and Stringizing Operators, The #include Directive, Conditional Compilation.	CO1, CO3
5	**User defined data-types:** Introduction, bit-fields, Nested structures, Array of structures, Structures and functions, Unions, enum, typedef.	CO1, CO3

	Files in C: Using Files in C, Read data from files, Writing data to files, Random access to files of records.	

Learning Resources

Text Books

1. Programming in C, ReemaThareja, AICTE Edition, 2018, Oxford University Press

Reference Books

1. Computer Science: A Structured Programming Approach Using C, B. A. Forouzan and R.F. Gilberg, Third Edition, 2007, Cengage Learning.
2. Programming in C, PradipDey, Manas Ghosh, AICTE Edition, Oxford University Press.
3. Programming with C, B. Gottfried, Third Edition, 2017, Schaum's outlines, McGraw Hill.
4. Problem Solving & Program Design in C,Jeri R. Hanly,Ellot B. Koffman,5th Edition, Pearson.

e- Resources & other digital material

1. http://cprogramminglanguage.net/
2. https://www.geeksforgeeks.org/c-programming-language/
3. https://www.greatlearning.in/academy/learn-for-free/courses/c-programming
4. https://www.udemy.com/course/the-complete-c-programming/
5. https://nptel.ac.in/courses/106/105/106105171/