24ES1101	PROGRAMMING IN C	L	T	P	C
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COURSE OBJECTIVE:

- Recall fundamental programming paradigms and Recognize the syntax and structure of C programs
- Understand the principles behind arrays and strings and the functionalities of one-dimensional and two-dimensional arrays.
- Apply knowledge of functions, including function prototypes, definitions, and function calls, to design.
- Analyze complex data structures like structures, unions, and self-referential structures, and their applications in programming
- Evaluate the efficiency and effectiveness of various sorting and searching algorithms.
- Design and implement programs that integrate multiple concepts, demonstrating creativity and proficiency in solving real-world problems using C programming techniques.

UNIT - I BASICS OF C PROGRAMMING 9

Introduction to programming paradigms – Algorithms – Flowchart - Structure of C program - C programming: Data Types — Storage classes - Constants — Enumeration Constants - Type Conversion Keywords – Operators: Precedence and Associativity - Expressions - Input/Output statements, Format specifiers, Assignment statements - Decision making statements - Switch statement - Break - Continue - Goto statement - Looping statements - Pre-processor directives - Compilation process.

UNIT - II ARRAYS AND STRINGS 9

Introduction to Arrays: Declaration, Initialization - One dimensional array - Example Program: Computing Mean, Median and Mode - Two dimensional arrays - Example Program: Matrix Operations (Addition, Multiplication, Determinant and Transpose) - String operations: length, compare, concatenate, copy, Reverse and Palindrome – Selection sort, Insertion sort - linear and binary search

UNIT - III FUNCTIONS AND POINTERS 9

Introduction to functions: Function prototype, function definition, function call, Built-in functions (string functions, math functions) - Recursion - Example Program: Computation of Sine series, Scientific calculator using built-in functions, Binary Search using recursive functions – Pointers – Pointer operators — Pointer arithmetic — Arrays and pointers — Array of pointers — Example Program: Sorting of names — Parameter passing: Pass by value, Pass by reference - Example Program: Swapping of two numbers and changing the value of a variable using pass by reference.

UNIT - IV STRUCTURES AND UNION 9

Structure - Nested structures- Pointer and Structures- Array of structures – Example Program using structures and pointers - Self-referentials structures - Dynamic memory

allocation – Singly linked list- typedef and Union.

UNIT - V **FILE PROCESSING** **9**

Files – Types of file processing: Sequential access, Random access – Sequential access file - Example Program: Finding average of numbers stored in sequential access file - Random access file - Example Program: Transaction processing using random access files – Command line arguments.

TOTAL : 45 PERIODS

COURSE OUTCOME(S):

Upon completion of the course, students will be able to:

CO1 Remember fundamental concepts of C programming and the compilation process.
CO2 Explain the structure of C programs, algorithms, flowcharts, and the usage of arrays and strings in programming.
CO3 Utilize functions, pointers, structures, and unions to solve programming problems, including recursion and dynamic memory allocation.
CO4 Evaluate and compare different file processing techniques and their applications in real-world scenarios.
CO5 Assess the efficiency and effectiveness of various sorting and searching algorithms.
CO6 Develop and implement programs that demonstrate proficiency in C programming paradigms.

TEXT BOOKS:

1. Reema Thareja, ¯Programming in C, Oxford University Press, Second Edition, 2016
2. Kernighan, B.W and Ritchie,D.M, The C Programming language, Second Edition, Pearson Education, 2006.

REFERENCE BOOKS:

1. Paul Deitel and Harvey Deitel, C How to Program, Seventh edition, Pearson Publication, 2015
2. Juneja, B. L and Anita Seth, Programming in C, CENGAGE Learning India pvt. Ltd.,2011
3. Pradip Dey, Manas Ghosh, Fundamentals of Computing and Programming in C, First Edition, Oxford University Press, 2009
4. Anita Goel and Ajay Mittal, Computer Fundamentals and Programming in C, Dorling Kindersley (India) Pvt. Ltd., Pearson Education in South Asia, 2011
5. Byron S. Gottfried, "Schism‘s Outline of Theory and Problems of Programming with C", McGraw-Hill Education, 1996

WEB REFERENCES:

1. https://github.com/tscheffl/ThinkC/blob/master/PDF/Think-C.pdf
2. https://freecomputerbooks.com/langCBooks.html

ONLINE COURSES / RESOURCES:

1. https://www.programiz.com/c-programming
2. https://www.tutorialspoint.com/cprogramming/index.htm
3. https://www.javatpoint.com/c-programming-language-tutorial
4. https://www.geeksforgeeks.org/c-programming-language/
5. https://en.wikibooks.org/wiki/C_Programming
6. https://www.cprogramming.com/tutorial/c-tutorial.html?inl=hp

CO – PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	1	1		1						
CO2	2	1	1	1	2	1						
CO3	3	2	2	1	3	1						
CO4	3	2	2	1	3	1						
CO5	2	1	1	1	2	1						
CO6	2	1	1	1	2	1						

Internal Assessment				End Semester Examinations
Assessment I (100 Marks)		Assessment II (100 Marks)		
Individual Assignment / Case Study / Seminar / Mini Project	Written Test	Individual Assignment / Case Study / Seminar / Mini Project	Written Test	Written Examinations
40	60	40	60	100
40%				60 %