

B23-ESC-101		Programming for Problem Solving					
L	T	P	Credit	End Semester Exam	Internal assessment	Total	Time
3	0	0	3	70	30	100	3 Hours
Purpose	To familiarize the students with the basics of Computer System and C Programming						
Course Outcomes							
CO1	Describe the overview of Computer System and Levels of Programming Languages.						
CO2	Learn to translate the algorithms to programs (in C language).						
CO3	Learn description and applications of conditional branching, iteration and recursion.						
CO4	To use arrays, pointers and structures to formulate algorithms and programs.						

UNIT – I

Overview of Computers: Block diagram and its description, Number systems, Arithmetic of number systems, Computer Hardware: Printers, Keyboard and Mouse, Storage Devices.

Introduction to programming language: Different levels of PL: High Level language, Assembly language, Machine language; Introduction to Compiler, Interpreter, Debugger, Linker, Loader, Assembler.

Problem Analysis: Problem solving techniques, Algorithms and Flowchart representation.

UNIT – II

Overview of C: Elements of C, Data types; Storage classes in C; Operators: Arithmetic, relational, logical, bitwise, unary, assignment and conditional operators, precedence & associativity of operators.

Input/output: Unformatted & formatted I/O function in C.

Control statements: if statement, switch statement; Repetition: for, while, and do-while loop; break, continue, goto statements.

UNIT – III

Arrays: Definition, types, initialization, processing an array, String handling.

Functions: Definition, prototype, parameters passing techniques, recursion, built-in functions, passing arrays to functions, returning arrays from functions.

UNIT – IV

Pointers: Declaration, operations on pointers, pointers and arrays, pointers and functions.

Structure & Union: Definition, processing, passing structures to functions, use of union.

Data files: Opening and closing a file, I/O operations on files.

Suggested Books:

1. Brian W. Kernighan Dennis Ritchie, "C Programming Language" Pearson Education India.
2. Subrata Saha, Subhodip Mukherjee: Basic Computation & Programming with 'C'-Cambridge University Press.
3. E Balagurusamy : Programming in ANSI C, TMH Education.
4. Pradip Dey and Manas Ghose, "Computer Fundamental and Programming in C", Oxford Pub.
5. Forouzan Behrouz, "Computer Science: A Structured Programming Approach Using C", Cengage Learning.
6. Ashok Kamthane, "Programming in C, 3e", Pearson Education India..
7. Yashwant Kanetker, "Let us C", BPB Publications.
8. A K Sharma, "Fundamentals of Computers & Programming" Dhanpat Rai Publications
9. Rajaraman V., "Computer Basic and C Programming", Prentice Hall of India Learning.

Note: The paper setter will set the paper as per the question paper templates provided.

B23-ESC-105	Programming for Problem Solving Lab						
L	T	P	Credit	Internal assessment	Practical Exam	Total	Time
0	0	2	1	40	60	100	3 Hours
Purpose	To Introduce students with problem solving using C Programming language						
Course Outcomes							
CO1	To formulate the algorithms for simple problems						
CO2	Implementation of arrays and functions.						
CO3	Implementation of pointers and user defined data types.						
CO4	Write individual and group report s: present objectives, describe test procedures and results.						

LIST OF PROGRAMS

1. Write a program to find the sum of individual digits of a positive integer.
2. Write a program to generate the first n terms of the Fibonacci sequence.
1. Write a program to generate all the prime numbers between 1 and n, where n is the input value given by the user.
3. Write a program to find the roots of a quadratic equation.
4. Write a function to generate Pascal's triangle.
5. Write a program for addition of Two Matrices
6. Write a program for calculating transpose of a matrix.
7. Write a program for Matrix multiplication by checking compatibility
8. Write programs to find the factorial of a given integer by using both recursive and non-recursive functions.
9. Write a function that uses functions to perform the count the lines, words and characters in a given text.
10. Write a program to explores the use of structures, union and other user defined variables
11. Write a program to print the element of array using pointers
12. Write a program to implement call by reference
13. Write a program to print the elements of a structure using pointers
14. Write a program to read a string and write it in reverse order
15. Write a program to concatenate two strings
16. Write a program to check that the input string is a palindrome or not.
17. Write a program which copies one file to another.
18. Write a program to reverse the first n characters in a file.

Note: At least 10 programs are to be performed & executed from the above list