



FACULTY OF ENGINEERING & TECHNOLOGY

Effective from Academic Batch: 2025-26

Programme: Bachelor of Technology (Computer Engineering)

Semester: I/II

Course Code: 102001217

Course Title: Computer Programming with C

Course Group: Engineering Science Course

Course Objectives: Students will gain understanding of basics of computer and programming language. Students will learn problem solving skills through C programming language.

Teaching & Examination Scheme:

Contact hours per week			Course Credits	Examination Marks (Maximum / Passing)				
Lecture	Tutorial	Practical		Theory		J/V/P*		Total
				Internal	External	Internal	External	
02	00	04	04	50 / 18	50 / 18	25 / 9	25 / 9	150 / 54

* J: Jury; V: Viva; P: Practical

Detailed Syllabus:

Sr.	Contents	Hours
1	Introduction to Computer Programming: Concepts of Machine level, Assembly level and high-level languages, Compiler and interpreter, Flowcharts and Algorithms	03
2	Fundamentals of C: Features of C language, structure of C Program, comments, header files, data types, constants and variables, operators, expressions, evaluation of expressions, type conversion, precedence and associativity, I/O functions	04
3	Control structure in C: Decision making and Branching: Simple if, if-Else, Nesting of if-else, Else If ladder, Switch statement, The ? operator, goto statement Decision making and Looping: while statement, do statement, for statement, Jumps in loop, break and continue, Nesting of control structures	06
4	Array and String: Concepts of array: One- and two-dimensional arrays, declaration and initialization, operation on array, multidimensional arrays Concepts of Character array/string: declaration and initialization, operations on string, Built-in string functions, table of strings	06
5	Functions: Concepts of user defined functions: function declaration, function definition, function call, passing parameters, nesting of functions	03



6	Structures: Basics of structure, structure members, accessing structure members, array of structures, structure and functions	02
7	Introduction to Pointers: Basics of pointers, pointer to pointer, pointer and array, pointer to array, array to pointer	02
TOTAL		26

List of Practicals / Tutorials:

1	- Write a program to print -HELLO WORLD. - Write a program to declare and assign variables. Display values of variables. - Write a program to read and print variables of different data types. Use the concepts of \n, \t, etc. in your program.										
2	- Write a program that reads two nos. from key board and perform their addition, subtraction, multiplication and division. Display answers of all operations. Show type conversion in division operation. - Write a program to find area of square, rectangle, triangle, and circle.										
3	- Write a program to calculate simple interest ($i = (p*r*n)/100$). Where i = Simple interest, p = Principal amount, r = Rate of interest, n = Number of years - Write a program to compute Fahrenheit from centigrade ($f=1.8*c +32$).										
4	- Write a program to convert days into months and days. - Write a program to enter a distance in to kilometer and convert it in to meter, feet, inches, and centimeter.										
5	Write programs to understand concepts of other operators - bitwise, increment, decrement, conditional, etc.										
6	- Write a program to divide two numbers. Perform the division only if divisor is not zero. (Hint: Use simple if) - Write a program to read a number and check it is even or odd. - Write a program to find that the accepted number is Negative, or Positive or Zero.										
7	- Write a program to read three numbers from keyboard and find out maximum out of these three (Nested if else). - Write a program to check whether the entered character is capital, small letter, digit or any special character.										
8	- Write a program to read marks from keyboard and your program should display equivalent grade according to following table (Note: Use if else ladder): <table><tr><td>Marks</td><td>Grade</td></tr><tr><td>100 - 80</td><td>Distinction</td></tr><tr><td>79 - 60</td><td>First Class</td></tr><tr><td>59 - 40</td><td>Second Class</td></tr><tr><td>< 40</td><td>Fail</td></tr></table> - Write a program demonstrate functionality of calculator using switch-case.	Marks	Grade	100 - 80	Distinction	79 - 60	First Class	59 - 40	Second Class	< 40	Fail
Marks	Grade										
100 - 80	Distinction										
79 - 60	First Class										
59 - 40	Second Class										
< 40	Fail										
9	Write a program to find sum of first N numbers using while, do-while and for loop. Ex. $1+2+3+4+.....+N$.										
10	- Write a program to find factorial of a given number. - Write a program to check whether the given number is prime or not. - Write a program to reverse a number.										



11	- Write a program to evaluate the series $1^2+2^2+3^2+.....+n^2$ - Write a program to find $1+1/2!+1/3!+1/4!+.....+1/n!$.
12	Write a program to display following patterns using asterisk (*). <pre>* * * * * * * * * * * * * * * * * * * * * * * * * * * * * *</pre>
13	Write a C program to display following patterns. <pre>1 1 2 3 4 5 A A A A A 2 3 2 3 4 5 B B B B 4 5 6 3 4 5 C C C 7 8 9 10 4 5 D D 1112131415 5 E</pre>
14	- Write a program to read array of integers and print it in forward and reverse order. - Write a program that adds two 1-dimensional array & store into third array.
15	- Write a program to insert and delete an element to/from desired position in an array. - Write a program for multiplication of two matrices.
16	- Write a program to read and display string. - Write a program to (i) find length of string using library function, (ii) concatenate two strings using library function, and (iii) reverse a given string using library function. - Write a program that checks whether the string is palindrome or not using string library function.
17	- Write a program to find the length of a string without using library function. - Write a program that reads a string and counts occurrences of a given character. - Write a program convert character into Toggle character.
18	- Write a function power that computes x raised to the power y for integer x and y and returns double type value. - Write a calculator program (add, subtract, multiply, divide). Prepare user defined function for each functionality.
19	- Write a program to find sum of elements of 1-D Array using Function. - Write a program that use user defined function swap() to interchange the value of two variable. - Write a function which takes a two integer array as argument and give sum of these arrays.
20	- Write a program to find factorial of a number using recursion. - Write a program to generate Fibonacci series using recursion.
21	- Define a structure to enter enrolment number, name of student and marks of the student in three subjects. Enter data for 5 students. Display grade cards of all students. Display student who has top rank in the class. - Define a structure called cricket that will describe the following information: Player name, Team name, Batting average Declare an array player. Write a program to print name & team of those players whose batting average is greater than given value.
22	- Write a program to demonstrate the concept of pointer. - Write a program to add elements of array using pointer.



Reference Books:

1	Programming in ANSI C, Eighth Edition by E. Balagurusamy, McGraw Hill Education
2	Let us C, by Yashavant Kanetkar, BPB Publications
3	Fundamentals of Computing and Programming in C, by Pradip Dey, Manas Ghosh, Oxford University Press
4	How to Solve it by Computer, by R. G. Dromey, Pearson Education

Supplementary learning Material:

1	NPTEL course / tutorials
---	--------------------------

Pedagogy:

- Direct classroom teaching
- Assignments/Quiz
- Continuous assessment
- Seminar/Poster Presentation
- Course Projects

Suggested Specification table with Marks (Theory) (Revised Bloom's Taxonomy):

Distribution of Theory Marks in %						R: Remembering; U: Understanding; A: Applying; N: Analyzing; E: Evaluating; C: Creating
R	U	A	N	E	C	
10%	20%	30%	30%	10%	-	

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Course Outcomes (CO):

Sr.	Course Outcome Statements	%weightage
CO-1	Formulate algorithm and/or flowchart for a given problem.	20
CO-2	Translate algorithm and/or flowchart into C program using correct syntax and execute it.	20
CO-3	Apply logical and structured thinking to write efficient code.	30
CO-4	Solve problems and build small applications using C programming concepts.	30

Curriculum Revision:

Version:	3.0
Drafted on (Month-Year):	April-2025
Last Reviewed on (Month-Year):	-
Next Review on (Month-Year):	April-2028