

Name of Faculty	:	Faculty of Engineering & Technology
Name of Program	:	Diploma Engineering
Course Code	:	2DCO01
Course Title	:	Introduction to Computer Programming
Type of Course	:	Basic Engineering (BE)
Year of Introduction	:	2023-24

Prerequisite	:	Maths, logic and most importantly zeal to learn
Course Objective	:	This course is designed to be a “gentle introduction” to the fundamentals of computer programming, which is the foundation of Computer Science. Students will design, write and debug computer programs
Course Outcomes	:	At the end of this course, students will be able to:
	CO1	Demonstrate problem solving skills by developing algorithms and drawing flowcharts to solve simple problems, Understand the process of compiling and executing a C program.
	CO2	Understanding various program and recognize various C tokens and datatypes. Constants and keywords applying it for the problems given in hand.
	CO3	Demonstrate the use of various operators and input output operators.
	CO4	Applying the concepts of top-down modular programming to decompose problem and a program solution into smaller pieces and Analyse how length of the source program can be reduced by using conditional statements and looping.
	CO5	Evaluate how array are effective in handling functions and data tables and how pointers support Dynamic memory management.
	CO6	Develop C Programs using various methods described above to solve real-world problems.

Teaching and Examination Scheme

Teaching Scheme (Contact Hours)			Credits	Examination Marks				
L	T	P		Theory Marks		Practical Marks		Total Marks
			C	SEE	CIA	SEE	CIA	
2	0	2	3	70	30	30	20	150

Legends: L-Lecture; T-Tutorial/Teacher Guided Theory Practice; P – Practical, C – Credit, SEE – Semester End Examination, CIA – Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)

Course Content

Unit No.	Topics	Teaching Hours	Weightage	Mapping with CO
1	Introduction to 'C' Language: Program, Software, Instruction, debugging, compilation and execution of C Program, Difference between Header files & library files, Compiler and Interpreter, Procedure Oriented Language, Importance of C, Basic structure of C, Algorithms & Flowchart.	06	10%	CO1 CO2
2	Constants, Variables & Data Types in 'C': Character set, C tokens, Keywords & Identifiers, Data types, Constants, Variables, Declaration of Variables, Assigning Values to Variables, Declaring a variable as Constant, Defining Symbolic constants.	06	16%	CO1 CO2
3	Operators and Expression in 'C': Classification of operators: Arithmetic, Relational, Logical, Assignment, Increment / Decrement, Conditional, Bitwise, Special Operators. Unary, Binary and Ternary Operators. Arithmetic expression, Evaluation, Type conversion: Implicit & Explicit, Precedence and Associativity, Various library functions from maths.h. Managing Input & Output Operations: Reading a Character, Writing a Character, Various library functions from ctype.h. Formatted Input, Formatted Output	10	20%	CO2 CO3
4	Conditional Statements, Branching and Looping: Decision making using simple if, if...else statement, nesting of if...else, else...if Ladder. Switch statements, conditional operator, goto statement. Need of looping, (pre-test) entry-controlled loop: while, for, (post-test) exit-controlled loop: do...while, difference between Counter- Controlled loops and Sentinel - controlled loops. Nesting of looping statements, use of break & continue, use of if...else in loop, infinite loop.	9	20%	CO3 CO4
5	Arrays: Character Arrays and Strings: Need of array, Declaration & Initialization of 1D array, Programs of 1D. 2D array, Memory allocation of 1D and 2D array, 2D array basic programs. Difference of character array with numeric array and importance of NULL character. Declaration, Initialization and various input and output methods of string, formatted	9	20%	CO4 CO5

	output of string, arithmetic operations on characters. Various functions of string.h: strlen, strcat, strcmp, strcpy, strev, strstr, etc. Two dimensional character array (table of strings).			
6	User-Defined Function in 'C': Need of modularization, advantages, Introduction to user- defined function, Function Prototype, Function Call, Function Body. Call by value, Actual & Formal Arguments, return value, Categories of functions, Nesting of Functions, Recursion. Array as Function arguments, Storage Classes: Scope, Life of a variable in 'C'	05	14%	CO5 CO6

Suggested Distribution of Theory Marks Using Bloom's Taxonomy						
Level	Remembrance	Understanding	Application	Analyse	Evaluate	Create
Weightage	20	30	30	20	0	0

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

Suggested List of Experiments/Tutorials

Sr. No.	Name of Experiment/Tutorial	Teaching Hours
1	Experiment to manage input and output operations	02
2	Write a program for Fibonacci series.	02
3	Experiment to demonstrate operators and expressions	02
4	Experiment to demonstrate conditional statements and branching	06
5	Experiment to apply loops	04
6	Experiment to demonstrate working of one dimensional arrays	02
6	Experiment to demonstrate working of two dimensional arrays	02
7	Experiment to demonstrate working of strings	04
8	Experiment to implement user defined functions in C	02
9	Create a program to demonstrate call by value and return by value	02
10	Write a program to show nesting of function	02

Major Equipment/ Instruments and Software Required

Sr. No.	Name of Major Equipment/ Instruments and Software
1	Code::Blocks
2	TurboC++ Version 3.0

Suggested Learning Websites

Sr. No.	Name of Website
1	www.tutorials4u.com/c/

2	www.cprogramming.com/tutorial.html
3	www.howstuffworks.com/c.htm
4	http://www.programmingtutorials.com/c.aspx
5	http://www.physics.drexel.edu/courses/Comp_Phys/General/C_basics/

Reference Books

Sr. No.	Name of Reference Books
1	Head First C by David Griffiths & Dawn Griffiths.
2	C How to program, 7/E by Deitel&Deitel, Prentice Hall
3	C: The Complete Reference by Herbert Schildt
4	Practical C Programming (Third Edition) by Steve Oualline
5	Programing in ANCI C 4e by E Balagurusamy