Program : **Diploma in Electronics/ Electronics and Communication Engineering**	
Course Code : **3045**	Course Title: **Fundamentals of C Programming**
Semester :**3**	Credits: **No Credit**
Course Category: **Program Core**	
Periods per week: **4 (L:4, T:0, P:0)**	Periods per semester:**60**

Course Objectives:

- To provide a basic knowledge in C Programming.
- To make use of Control blocks, Looping, String Manipulation, and functions to solve real world problems.
- To utilize C programming for real-life programming tasks

Course Prerequisites:

Topic	Course code	Course name	Semester
Basic principles and theorms of Engineering Mathematics		Mathematics I &II	1 & 2
Basic functions and features of Computer, Operating system and Internet applications, basic programming skills in Python.		Introduction to IT systems Lab	1

Course Outcomes:

On completion of the course, the student will be able to:

COn	Description	Duration (Hours)	Cognitive Level
CO1	Make use of programming concepts with C programming.	13	Applying
CO2	Make use of iterative control structuresand arrays in programs.	15	Applying
CO3	Develop programs using pointers and strings to solve problems more efficiently.	15	Applying
CO4	Make use of functions to solve problems effectively	15	Applying
	Series Test	2	

CO - PO Mapping:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3						
CO2	3						
CO3	3						
CO4	3						

3-Strongly mapped, 2-Moderately mapped, 1-Weakly mapped

Course Outline:

Module Outcomes	Description	Duration (Hours)	Cognitive Level
CO1	**Make use of programming concepts with C programming.**		
M1.01	Understand structure of a C program	1	Understanding.
M1.02	Use the terms Keywords, Variables, Constants, Data types and type qualifiers	3	Applying
M1.03	Experiment with basic input and output functions	3	Applying
M1.04	Make use of arithmetic, relational, conditional, logical, bit-wise, and assignment operators	4	Applying
M1.05	Apply type casting on data types	2	Applying
Contents: **Introduction to Programming concepts**: Structure of a C program - Keyword, Variables, Constants,Data types and type qualifiers. Output and input functions, Operators - Arithmetic, relational, logical, increment/decrement, conditional, assignment, bit wise, Assignment, Conditional and type casting.			
CO2	**Make use of iterative control structures and arrays in programs.**		
M2.01	Experiment with the control structures.	2	Applying
M2.02	Make use of looping structures	2	Applying
M2.03	Develop programs with unconditional control statements.	2	Applying
M2.04	Experiment with one dimensional array operations.	3	Applying.
M2.05	Make use of two dimensional array declaration	3	Applying.
M2.06	Make use of matrix operations.	3	Applying

	Series Test – I	1	
Contents: **Iterative control structures and arrays:**Control structures - if, if-else, nested if statement, and switch. Looping structures - while, do-while, for, nested loops, Unconditional control statements-break, continue, goto. Array operations- insertion, deletion, searching, sorting. Two dimensional array declaration - two dimensional array operations- Matrix manipulations (addition, multiplication etc)			
CO3	**Develop programs using pointers and strings to solve problems more efficiently.**		
M3.01	Develop concepts of pointers in programming.	2	Applying
M3.02	Make use of pointer arithmetic operations	3	Applying
M3.03	Develop programs for accessing strings using pointers	3	Applying
M3.04	Experiment with gets() and puts() functions.	3	Applying
M3.05	Make use of built-in string handling functions	4	Applying
Contents: **Pointers and string operations:** Basics of Pointers, Pointers arithmetic operations - addition, subtraction, increment, decrement, comparison, accessing strings using pointers,gets() and Puts() functions, String handlingfunctions.			
CO4	**Make use of functions to solve problems effectively**		
M4.01	Outline functions, types and advantages.	2	Understanding
M4.02	Illustrate structure of a user defined functions	3	Understanding
M4.03	Make use of function declaration, function call, arguments, return type	3	Applying
M4.04	Construct different types of functions	2	Applying
M4.05	Build programs with call by value and call by reference.	3	Applying
M4.06	Make use of recursive functions	2	Applying
	Series Test - II	1	
Contents: **Functions:**Definition of Functions - Structure of user defined functions-functionprototype, function call, arguments, return type - Passing arguments to a Function: call byvalue, call by reference, Recursive functions.			

Text / Reference:

T/R	Book Title/Author
T1	Programming in ANSI C by Balaguruswami E, TMH publications
R1	Computing Fundamentals and C Programming | 2nd Edition by E Balaguruswami, TMH publishers
R2	Programming in C- by ReemaThareja, OUP India publishers
R3	C Programming Absolute Beginner's Guide by Greg Perry, Dean Miller, QUE Publications
R4	C: The Complete Reference by Herbert Schildt, TMH Publications
R5	Programming in C -second edition - R. Subburaj, - Vikas Publishing House.

Online Resources:

Sl.No	Website Link
1	https://www.programiz.com/c-programming
2	https://www.tutorialspoint.com/cprogramming/index.htm
3	https://www.cprogramming.com/
4	https://www.geeksforgeeks.org/c-programming-language/
5	https://www.freecodecamp.org/news/the-c-beginners-handbook/