Lok Jagruti Kendra University

University with a Difference

Diploma in Automobile Engineering

LJ Polytechnic

Course Code: 025010301

Programming in C

Programme/ Branch Name			Diploma in Automobile Engineering			
Course Name	Programming in C				**Course Code**	025010301
Course Type	HSSC	BSC	ESC	PCC	OEC	PEC

Legends: HSSC: Humanities and Social Sciences Courses BSC: Basic Science Courses
ESC: Engineering Science Courses PCC: Program Core Courses
OEC: Open Elective Courses PEC: Program Elective Courses

1. Teaching and Evaluation Scheme

Teaching Hours / Week					Evaluation Scheme				
L	**T**	**P**	**Total Teaching Hours**	**Total Credit**	**CA**	**CCE**	**SEE (TH)**	**SEE (PR)**	**Total**
0	0	6	6	3	50	-	-	50	100

Legends: L: Lectures T: Tutorial P: Practical
CA: Continuous Assessment (Attendance + Activity)
CCE: Continuous & Comprehensive Evaluation
SEE (Th): Semester End Evaluation (Theory)
SEE (Pr): Semester End Evaluation (Practical)

2. Prerequisite

- ✓ Basic Computer Knowledge

3. Rationale

To provide exposure to problem-solving by developing an algorithm, flowchart and implement the logic using C programming language.

4. Objectives

- ✓ Formulate simple algorithms for arithmetic, logical problems and translate them to programs in C language.
- ✓ Implement, test and execute programs comprising of control structures.
- ✓ Decompose a problem into functions and synthesize a complete program.
- ✓ Demonstrate the use of arrays, strings and structures in C language.
- ✓ Understand the concept of pointers.

5. Contents

Unit No.	Unit Name	Topics	Learning Outcome	% Weightage	Hours
1.	**Fundamentals of C Programming**	1.1 Introduction to components of a Computer System 1.2 Introduction to Algorithm and Flowchart 1.3 Keywords, Identifiers, Constants and Variables 1.4 Data types in C 1.5 Operators in C 1.6 Basic Input and Output Operations 1.7 Expressions and Precedence of Operators 1.8 In-built Functions	• Formulate simple algorithms for arithmetic, logical problems and translate them to programs in C language	25	08
2.	**Control Structures**	2.1 Introduction to Control Structures 2.2 Branching and looping structures 2.3 If statement, If-else statement, Nested if-else, else-if Ladder 2.4 Switch statement 2.5 For loop, while loop, Do while loop 2.6 Break and continue	• Implement, test and execute programs comprising of control structures.	20	08
3.	**Functions, Arrays and Strings**	3.1 Introduction to functions 3.2 Function prototype, Function definition, accessing a function and parameter passing 3.3 Recursion 3.4 Introduction to Arrays 3.5 Declaration and initialization of one dimensional and two-dimensional arrays 3.6 Definition and initialization of String 3.7 String functions	• Decompose a problem into functions and synthesize a complete program. • Demonstrate the use of arrays and strings in C language.	25	08
4.	**Structure and Union**	4.1 Concept of Structure and Union 4.2 Declaration and Initialization of structure and union 4.3 Nested structures 4.4 Array of Structures	• Demonstrate the use of structures and union in C language.	15	08

		4.5 Passing structure to functions			
5.	**Pointers**	5.1 Fundamentals of pointers 5.2 Declaration, initialization and dereferencing of pointers 5.3 Operations on Pointers 5.4 Concept of dynamic memory allocation	• Understand the concept of pointers.	15	06
				Total Hours	**38**

6. Suggested Specification Table for Evaluation Scheme

Unit No.	Unit Name	Distribution of Topics According to Bloom's Taxonomy					
		R %	U %	App %	C %	E %	An %
1.	Fundamentals of C Programming	20	30	20	10	10	10
2.	Control Structures	20	30	20	10	10	10
3.	Functions, Arrays and Strings	20	30	20	10	10	10
4.	Structure and Union	20	30	20	10	10	10
5.	Pointers	20	30	20	10	10	10

Legends: R: Remembering U: Understanding
App: Applying C: Creating
E: Evaluating An: Analyzing

7. List of Practicals / Exercises

Sr. No.	Practical / Exercises	Hours
	Simple C Programs	
1	Hello World Program in C	1
2	C program to check whether the given number is positive or negative	1
3	Reverse an input number using recursion	1
4	Program to find greatest of three numbers	1
5	C Program to print Fibonacci series in a given range	1
6	C Program to find factorial of a given number	1
7	Find Prime numbers in a given range	1
8	C Program to check if given number is Armstrong or not	1
9	C Program to check if given number is palindrome or not	1
10	C program to display palindrome numbers in a given range	1
11	C Program to check if number is odd or even	1
12	C Program to find out the ASCII value of a character	1
13	C Program to find the size of int, float, double and char	1
14	C Program to check whether an alphabet is vowel or consonant	1
15	C Program to check leap year	1
16	C Program to find sum of first n natural numbers	1

String Programs		
1	Program to convert string from upper case to lower case	1
2	Program to convert string from lower case to upper case	1
3	Sort a set of strings in ascending alphabetical order	1
4	Find length of a string without using strlen()	1
5	String concatenation without using strcat	1
6	Reverse a String using recursion	1
Array Programs		
1	Program to sort array in ascending order	1
2	Find largest element of given array	1
3	C program to find sum of array elements	1
4	C Program to find number of elements in an array	1
Sorting programs		
1	Bubble sort program in C	1
2	Insertion sort program in C	1
3	Selection sort program in C	1
4	Quicksort program in C	1
C Pointer programs		
1	C program to find the largest of three numbers using Pointers	1
2	C program to count vowels and consonants in a String using pointer	1
3	C program to print String using Pointer	1
4	C program to swap two numbers using pointers	1
5	C program to create initialize and access a pointer variable	1
Programs on calculation		
1	Find the value of nPr for given value of n & r	1
2	Find the value of nCr for given value of n & r	1
3	C Program to multiply two floating numbers	1
4	C Program to find out Quotient and Remainder	1
5	C Program to find average of two numbers	1
Number system conversion programs		
1	Binary to decimal conversion	1
2	C Program to convert Decimal to Binary	1
3	C Program to convert Decimal to Octal	1
4	C Program to convert Octal to Decimal	1
5	C Program to convert Binary to Octal	1
6	C Program to convert Octal to Binary	1
Programs to find out areas of Geometric figures		
1	C program to find area and circumference of circle	1
2	C program to find area of equilateral triangle	1
	Total Hours	**48**

8. Reference Books

1) E. Balaguruswamy, Programming in ANSI C, McGraw-Hill (Text Book)
2) Kernighan, Ritchie, “The C programming Language”, Prentice Hall of India
3) Sumitabha Das, Computer Fundamentals and C Programming, McGraw-Hill
4) Pradeep Day and ManasGosh, “Programming in C”, Oxford University Press
5) Byron Gottfried, “Programing with C”, McGraw Hill (Schaum‟s outline series)

6) Venugopal K.R, Prasad Sudeep, “Mastering C”, McGraw-Hill
7) KanetkarYashwant,” “Let Us C”, BPB Publication.

9. Open Sources (Website, Video, Movie)

1) https://www.youtube.com/c/TheAutomotives
2) https://theautomobileengineers.blogspot.com/
3) https://www.tutorialspoint.com/cprogramming/index.htm
4) https://www.youtube.com/watch?v=7Dh73z3icd8&list=PLu0W_9lII9aiXlHcLx-mDH1Qul38wD3aR