Lok Jagruti Kendra University
University with a Difference

Diploma in Computer Science Engineering

LJ Polytechnic

Course Code:025130104

Programming in C

Programme/ Branch Name			Diploma in Computer Science Engineering			
Course Name	Programming in C				**Course Code**	025130104
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 Credit**	**CCE**	**SEE (Th)**	**SEE (Pr)**	**Total**
2	0	4	4	50	50	50	150

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

2. Prerequisite

- ✓ Basic knowledge of computer
- ✓ Basic problem-solving capability

3. Rationale

Computer engineers have to write programs to cater to various IT solutions. To develop a program, they have to build logic, develop algorithms and flowcharts. This course has been designed keeping in view of developing these skills. Besides its use to write codes for low-level programming such as developing an operating system, drivers, and compilers, 'C' has been widely used as a general-purpose language to develop basic applications. This course deals with fundamental syntactic information about 'C' that will help students to apply the basic concepts, program structure, and principles of 'C' programming paradigm to build given application.

4. Objectives

- ✓ This course aims to help the students to attain the following industry-identified competency through various teaching-learning experiences.
  - Development of problem-solving ability & logic
  - Development of programming & coding ability using 'C' language

5. Contents

Unit No.	Unit Name	Topics	Learning Outcomes	% Weightage	Hours
1	**Program Logic Development**	1.1. Flowchart: Definition &importance of flowchart, Symbols of flowchart, Guidelines for preparing a flowchart, Flowchart structure, Limitation of flowchart 1.2. Fundamentals of algorithm: Definition, notation &importance of algorithm, Pseudo-code for algorithms, Assignment statements, Basic control structure	• Draw flowchart to solve given problem logically. • Develop algorithm to solve given program. • Development of basic programming logic. • Problemsolving ability.	10	4
2	**Basics of 'C' Programming**	2.1. Introduction: History of C, Importance of C, Advantages of C programming, General structure of C program, Header files & main() function 2.2. Data concepts: Character set, Tokens, Keywords, Identifiers, Constants 2.3. Datatypes in 'C': Definition of datatypes, Categories of datatypes, Primitive datatypes, User defined datatypes 2.4. Variables: Definition, Declaration, Definition and initialization of variable, Rules for naming a variable, Type casting	• Overview of 'C' programming environment. • Basic programming concepts. • Writing and executing 'C' programs.	20	6
3	**Operators & Expressions in 'C'**	3.1. Input and Output statements: Output statement-printf(), Input statement-scanf() 3.2. Operators in 'C': Logical operator, Arithmetic operator, Relational operator, Assignment operator, Conditional operator,	• How I/O statements are used in programs. • Operators and related 'C' programs. • Priority and order of execution of operators. • Important concepts of storage classes.	20	6

		Increment and Decrement operator, SizeOfoperator, Operator precedence 3.3. Formatted I/O Statements 3.4. Storage Classes: Extern, Auto, Register, Volatile, Enum, Typedef, Constant, Static			
4	**Decision Making Statements**	4.1. Conditional branching 4.2. If statement 4.3. If-Else statement 4.4. Nested If-Else statement 4.5. Else-If Ladder statement 4.6. Switch case	• Importance of decision-making statements. • Writing & executing comprehensive 'C' programs related to control structures.	24	6
5	**Looping Control Structure**	5.1. Introduction: Definition, Importance and Need, Types of loop 5.2. While loop 5.3. Do-While loop 5.4. For loop 5.5. Nested For loop 5.6. "break, continue and goto" statements 5.7. While & For vs Do-while	• Importance & essentiality of looping structures. • Writing & executing comprehensive 'C' programs related to loops.	26	6
				Total Hours	**28**

6. List of Practicals / Exercises

The practical/exercises should be properly designed and implemented in an attempt to develop different types of skills so that students can acquire the competencies/Programme outcomes. Following is the list of practical exercises for guidance.

Sr. No.	Practicals / Exercises	Key Competency	Hours
1	Create flowchart and write algorithms for variousproblems.	Concept of flowchart and algorithm development	4
2	Implement various 'C' programs related to constant, keywords, variable.	Application and working mechanism of variables, constants and keywords	4
3	Implement various 'C' programs related to I/O statements.	Concept and working of	4

		I/O statements and header files.	
4	Implement various 'C' programs related to primitive and user defined data types.	Application of various primitive and user defined data types	4
5	Implement various 'C' programs related to operators & expressions.	In-depth knowledge of operators &its working	4
6	Implement various 'C' programs related to if-else statement.	Various problem solving with decision making statement if-else	4
7	Implement various 'C' programs related to else-if ladder statement.	Various problem solving with decision making statement else-if ladder	4
8	Implement various 'C' programs related to switch statement.	Various problem solving with decision making statement switch case	4
9	Implement various 'C' programs related to while loop.	Various problem solving with looping structure "while"	8
10	Implement various 'C' programs related to for loop.	Various problem solving with looping structure "for"	8
11	Implement various 'C' programs related to patterns and nested loop.	Various pattern creation using nested looping structure	8
		Total Hours	**56**

7. 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	Program Logic Development	30	30	40	-	-	-
2	Basics of 'C' Programming	25	25	30	5	10	5
3	Operators & Expressions in 'C'	25	25	30	5	10	5
4	Decision Making Statements	20	30	30	10	5	5
5	Looping Control Structure	20	30	30	10	5	5

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

8. Textbooks

1) Programming in ANSI C by E Balagurusamy, Latest Edition, Tata McGraw HillPublication.

2) Let Us C by YashavantKanetkar, Latest Edition,BPB Publication.

9. Reference Books

1) Programming in C by Satya Prakash,Latest Edition, I.K. International Pvt. Ltd.
2) C: The Complete Reference by Herbert Schildt,Latest Edition, Tata McGraw HillPublication.
3) The C Programming Language by Brian W. Kernighan / Dennis Ritchie,Latest Edition, Pearson Education.
4) Computer Fundamentals and Programming in C by Reema Thareja, Latest Edition,Oxford University Press.

10.Open Sources (Website, Video, Movie)

1) https://nptel.ac.in/courses/106/104/106104128/
2) https://www.coursera.org/learn/c-for-everyone
3) https://www.tutorialspoint.com/cprogramming/index.htm