



बिरसा मुंडा ट्रायबल युनिवर्सिटी Birsa Munda Tribal University

राजपिपला, जि० नर्मदा Rajpipla, Dist. Narmda

Established by Tribal Development Department, Govt. of Gujarat

School of Computer Science

P.G.D.C.A. (Post Graduate Diploma in Computer Applications) Programme

Subject Code & Name: PGDCA101- Problem Solving Methodologies and Programming in C

Teaching And Evaluation Scheme:

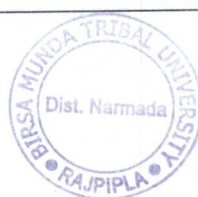
Teaching Scheme				Examination Scheme			
Credits				Component Weightage			
				CCE		SEE	
L	T	P	Total	TH	PWE	TH	PWE
4	-	-	4	50%	-	50%	-

Programme Name	P.G.D.C.A.
Semester	1
Course Code	PGDCA101
Course Title	Problem Solving Methodologies and Programming in C
Course Content Type (Th. / Pr.)	Th.
Course Credit	4
Sessions + Lab Per Week	4
Total Teaching/ Lab Hours	60
* 2 Lab = 1 session	

Learning Objectives

Upon successful completion of this course, students will be able to:

- Develop logical and analytical thinking required for problem solving and program development.
- Understand fundamental programming concepts and the structure of C programming language.
- Apply control structures and functions for developing simple and modular programs.



- Understand arrays, strings, structures and pointers for efficient data handling and memory management.
- Design programs independently through step-by-step problem analysis and coding practices.

Learning Outcomes

After successful completion of the course, students will be able to:

- Explain the fundamental concepts of algorithms, flowcharts and C programming constructs.
- Develop and execute C programs using appropriate operators, control statements and functions.
- Analyse programming problems and divide them into smaller logical components for efficient solution development.
- Demonstrate the use of arrays, strings, structures and pointers in handling different programming tasks.
- Design simple and modular C programs for real-life computational problems with improved logical reasoning.

CLO-PLO Mapping Matrix:

CLOs/PLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
CLO1	3	1	–	1	1	1
CLO2	3	3	1	2	2	1
CLO3	2	2	1	3	2	1
CLO4	3	3	1	2	2	1
CLO5	2	3	2	3	2	2

Detailed Contents

Unit	Topic/Sub Topic	Teaching Hours
I Introduction to C and Pre-Programming Techniques	Introduction to C language • History and evolution • Features and limitations • C Tokens • Operators • Data types • Type Casting and Type Conversion Pre-Programming Techniques • Algorithm • Concept and Use • Characteristics	15

	• Steps • Flow Chart • Concept and Use • Flowchart Symbols • Representation of programming elements (input/process/output) • Dry run • Concept and Use • Steps • Catching and correcting errors • Documentation Tools • Concept and Use of Decision Tree • Concept and Use of Decision Table	
II Control Structures And Functions	Sequential Execution • Concept and application Decision Structures • Concept and application • Simple if, if-else, if else ladder, nested if, switch case Looping Structures • Concept and application • for loop, while loop, do while loop • jumping statements Built in functions • Concept and application • Library functions ○ <stdio.h> : printf(), scanf(), getchar(), putchar(), gets(), puts() ○ <math.h> : sqrt(), pow(), ceil(), floor(), abs(), log() ○ <string.h> : strlen(), strcpy(), strcat(), strcmp(), strrev(),strupr(), strlwr() • <ctype.h> : isalpha(), isdigit(), isalnum(), islower(), isupper(), tolower(), toupper() User defined functions • Concept and application • Types of UDFs	15
III Array and strings	Array • Concept and use • Dimensions in array	15

	• Array manipulation • Sorting and Searching String • Concept and use • Built in string functions • String manipulation	
IV Structure and Pointer	Structure • Concept and use • Declaration, initialization and basic operations • Array of Structure, Array within Structure • Structure and UDF • Nested Structures Pointer • Concept and use • Pointer to variables • Pointer to array • Pointer to string • Pointer to Structure • Pointer within Structure • Pointer to pointer • Dynamic Memory Allocation	15
Reference Books		
1. Programming in ANSI C – E. Balagurusamy 2. Let Us C – Yashwant Kanitkar 3. The C Programming Language – Kernighan and Ritchie 4. Exploring C – Yashwant Kanitkar		
Web Links		
1. https://edu.gcfglobal.org/en/computerprogramming 2. https://www.tutorialspoint.com/data_structures_algorithms/algorithms_basic_s.htm 3. https://www.learn-c.org/ https://www.geeksforgeeks.org/c-programming-language/		

L:: Lecture, **T::** Tutorial, **P::** Practical

CCE:: Continuous & Comprehensive Evaluation

(CCE theory includes Mid Semester Examination, Assignment, MCQ Quizzes, Seminar, Reflective Notes, Class Participation, Case Analysis and Presentation, Slip Tests (Announced/ Surprised), Attendance etc. or any combination of these)

PWE: Practical Work Examination

(PWE includes Laboratory Practical Work, Project Work, Viva simulation exercise work etc.)

SEE:: Semester End Evaluation