



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: PGDCA103- Practical based on PGDCA101 and PGDCA102

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	PGDCA103
Course Title	Practical based on PGDCA101 and PGDCA102
Course Content Type (Th. / Pr.)	Pr.
Course Credit	4
Sessions + Lab Per Week	4
Total Teaching/ Lab Hours	120
* 2 Lab = 1 sessions	

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.
- Develop a comprehensive understanding of database management systems and their role in modern information systems.
- Impart knowledge of database architecture, data models, and entity-relationship modelling techniques.
- Design relational databases using normalization principles and integrity constraints.
- Understand practically the concept of SQL for database definition, manipulation, querying, and transaction processing.
- Familiarize students with transaction management, concurrency control, database security, backup, and recovery mechanisms.

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.
- Explain the concepts, architecture, and components of database management systems and various data models.
- Design conceptual and logical database schemas using Entity Relationship (ER) modelling techniques.
- Apply relational database concepts, keys, constraints, and normalization techniques to eliminate data redundancy and anomalies.
- Construct and execute SQL queries using DDL, DML, DCL, TCL commands, joins, subqueries, views, indexes, and built-in functions for efficient data retrieval and manipulation.

- Implement transaction management concepts, concurrency control mechanisms, and database security measures to ensure data consistency, integrity, and reliability

CLO–PLO Mapping Matrix:

CLOs/PLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
CLO1	3	1	1	1	2	1
CLO2	3	3	1	2	2	1
CLO3	2	2	1	3	2	1
CLO4	2	3	3	3	2	1
CLO5	3	3	3	2	3	1
CLO6	2	2	2	3	3	3

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

- **Sample Programming exercise based on PGDCA101 Problem Solving Methodology and Programming in C**

1. Write a program to find the area of a circle.
2. Write a program to convert temperature from Celsius to Fahrenheit.
3. Write a program to swap two numbers using a third variable.
4. Write a program to find the largest of two numbers.
5. Write a program to find the largest among three numbers.
6. Write a program to check whether a number is even or odd.
7. Write a program to determine whether a student has passed or failed based on marks.
8. Write a program to calculate total marks and percentage of five subjects.
9. Write a program to display numbers from 1 to N.
10. Write a program to display the multiplication table of a given number.
11. Write a program to find the sum of first N natural numbers.

12. Write a program to count the number of digits in a given number.
13. Write a program to find the factorial of a number.
14. Write a program to display the Fibonacci series up to N terms.
15. Write a program using a function to find the square and cube of a number.
16. Write a program using a function to find the maximum of two numbers.
17. Write a program to store 10 numbers in an array and calculate their sum and average.
18. Write a program to find the largest element in an array.
19. Write a program to find the length of a string and convert it into uppercase.
20. Create a structure to store student details (Roll No., Name, Marks) and display the details.

- **Sample Programming exercise based on PGDCA102 Database Management System**

1. Draw an ER Diagram for a Student Information System.
2. Draw an ER Diagram for a Library Management System.
3. Draw an ER Diagram for a Hospital Management System.
4. Identify entities, attributes, and relationships from a given case study.
5. Create a relational schema from a given ER Diagram.
6. Identify Primary Key and Foreign Key in given relations.
7. Convert an unnormalized table into First Normal Form (1NF).
8. Convert a table from 1NF to 2NF.
9. Create a database named CollegeDB.
10. Create a Student table with appropriate fields and constraints.
11. Insert records into the Student table using the INSERT command.
12. Display all records from the Student table using the SELECT command.
13. Display records based on conditions using the WHERE clause.
14. Update student information using the UPDATE command.
15. Delete specific records using the DELETE command.
16. Display records in ascending and descending order using ORDER BY.
17. Use aggregate functions (COUNT, SUM, AVG, MAX, MIN) on a table.
18. Retrieve data from two related tables using an INNER JOIN.
19. Create and use a VIEW on the Student table.
20. Grant and revoke permissions on a table using GRANT and REVOKE commands.