

25UCSL404	DATABASE MANAGEMENT SYSTEMS LAB	Category	L	T	P	R	Credit	Year of Introduction
		PCL	0	0	3	0	2	2025

Preamble: The Database Management Systems Laboratory provides hands-on experience in designing, implementing, and managing relational and NoSQL databases. The laboratory emphasizes schema design, SQL programming, query processing, and transaction management for efficient data handling. It also supports the development of practical skills in database application development and database programming concepts.

Prerequisite: NIL

Course Outcomes: After the completion of the course, the student will be able to:

CO	Course Outcomes	Knowledge Level
CO1	Apply database design principles to develop normalized database schemas for real-world problem domains.	K3 Apply
CO2	Apply SQL commands to create, manipulate, retrieve, and control data in relational databases.	K3 Apply
CO3	Apply PL/SQL constructs to develop procedures, functions, triggers, packages, and cursors.	K3 Apply
CO4	Apply SQL and NoSQL techniques to perform CRUD operations and develop database-driven applications.	K3 Apply

Mapping of course outcomes with program outcomes and program-specific outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	3	3	2	2	-	-	1	-	-	2	2	2
CO2	3	2	2	2	2	-	-	1	-	-	2	2	3
CO3	3	2	3	2	3	-	-	1	-	-	2	2	3
CO4	3	3	3	3	2	-	-	2	-	-	2	2	3
Avg	3	2.5	2.75	2.25	2.25	-	-	1.25	-	-	2	2	2.75

Mapping of course outcomes with Knowledge and Attitude Profile (WK)

	WK1	WK2	WK3	WK4	WK5	WK6	WK7	WK8	WK9
CO1	*	*	*	*	*	*		*	
CO2	*	*	*	*	*	*		*	
CO3	*	*	*	*	*	*		*	
CO4	*	*	*	*	*	*		*	

Wks Mapped with the course

WK1	WK2	WK3	WK4	WK5	WK6	WK7	WK8	WK9
*	*	*	*	*	*		*	

Mark Distribution:

Total Marks	CIE Marks	ESE Marks	ESE Duration
100	50	50	3 hrs

**Course Assessment Method
(CIE: 50 marks, ESE: 50 marks)**

Continuous Internal Evaluation Marks (CIE):

Experiment No.	Attendance	Preparation/Pre-Lab Work experiments, Viva and Timely completion of Lab Reports / Record (Continuous Assessment)	Internal Examination	Total
1	5	Design a database schema for an application with description. *	ER diagram from a problem	
2		Creation of database schema - DDL (create tables, set constraints, relationships, create indices, delete and modify tables). *		50
3		Database initialization - Data insert, Data import to a database.		
4		Implement DML commands: Insert, Update, Delete and data import. *		
5		Implementation of various aggregate functions. *		
6		Implementation of Order By, Group By & Having clause in SQL. *		
7		Implement set operators, nested queries and subqueries. *		
8		Implement join operations: Natural join, Equi join, Inner join, Outer join.*		
9		Implement SQL TCL commands: COMMIT, ROLLBACK, SAVEPOINT. *		
10		Implement SQL DCL commands: GRANT and REVOKE user privilege.*		
11		Creation and implementation of Views and Assertions. *		
12		Creation of Procedures, Triggers, Functions. *		
13		Creation of Packages and cursors. *		
14		Design a database application using any front-end tool for any problem. The application constructed should have five or more tables. *		
15		Perform basic CRUD (Create, Read, Update, Delete) operations on a Cassandra table.		
16		Create a simple application using MongoDB. *		
17		Analyze how a single-column B-Tree index improves query performance by reducing execution time from a full table scan to an efficient index seek.		
18		Observe how adding indexes improves SELECT speed but degrades INSERT / UPDATE performance.		

End Semester Examination Marks (ESE):

Procedure/ Preparatory work/ Design/ Algorithm	Conduct of experiment/ Execution of work/troubleshooting/ Programming	Result with valid inference/quality of output	Viva voce	Record	Total
10	15	10	10	5	50

1. Submission of Record: Students shall be allowed for the end semester examination only upon submitting the duly certified record.

Text Books:

1. Silberchatz, A., Korth, H. F., & Sudarshan, S. (2019). *Database system concepts* (7th ed.). McGraw-Hill Education.
3. Elmasri, R., & Navathe, S. B. (2016). *Fundamentals of database systems* (7th ed.). Pearson.

Reference Books:

1. Fowler, A. (2015). *NoSQL for dummies* (1st ed.). John Wiley & Sons.

2. Pivert, O. (2018). *NoSQL data models: Trends and challenges* (1st ed.). Wiley.
3. McCreary, D., & Kelly, A. (2014). *Making sense of NoSQL: A guide for managers and the rest of us* (1st ed.). Manning Publications.