

Branch Name:	MCA
Program Code:	CS201
Course Name:	Advanced Database Management System
Course Code:	4CS2010102T
Pre-requisite Course:	Basic knowledge of Database Management System

Course Objectives:

1. Understanding how to design and manage databases that are distributed across multiple Locations.
2. Learning about the principles and architectures of parallel databases for improved performance and scalability.
3. Understanding the concepts of object-oriented databases and their applications.
4. Exploring the characteristics and applications of No SQL databases for handling large and Diverse data sets

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
3	-	-	3	60	40	-	-	100

Course Contents:

Unit No	Topic	Total Hours	Weightage (%)
1	Introduction to Database System Basic Concepts: Data, Information, Database, Database Systems, Database Management Systems, Instance, Schema, Database Applications, Database Architecture, Database User and Administrators, Purpose and Advantages of Database Management System (Over File System).	11	25
2	Database Design, Normalization, E-R Diagram and Transactions: Entity, Attributes, Normalization, First Normal Form (1NF), Second Normal Form (2NF), Third Normal Form (3NF), E-R Diagram, Transaction, ACID Property. Structured Query Language (SQL): Data Definition Language (DDL), Data Manipulation Language (DML), Data Control Language (DCL), Transaction Control Language (TCL).	11	25

3	Database Constraints and Operators: Primary Key, Foreign Key, Unique Key, Check Constraints, Null and Not null Constraints, Arithmetic Operators, Logical Operators, Range Searching (Between), Pattern Matching (Like), Set Operator. SQL Query Clauses and Functions: Where Clause, Order By, Group By, Having clause String Function, Aggregate Function, Numeric Function, Date function Joining Tables and Advanced SQL Concepts: Joins (Inner Join, Outer Join, Cross Join, and Self Join) Sub Query, Index, View	11	25
4	SQL Database Operation Creating New User in SQL Import Export Data in SQL with Database PL/SQL: Introduction, PL/SQL Block Structure, Cursor, Procedure, Function, Trigger Emerging Database Concepts: No SQL Databases New SQL Databases XML Databases Cloud-Based Data Management Systems	15	25

Text Books:

1. Database System Concepts **Author:** Abraham Silberschatz, Henry F. Korth, and S. Sudarshan
Publisher: McGraw-Hill **Year of Publication:** March 2022 (7th Edition) **ISBN:** 9780078022159
2. Advanced Database Management System **Author:** Dr. Sanjeev Sharma **Publisher:** Wiley India **Year of Publication:** 2024 **ISBN:** 9789351199380
3. Advanced Database Management Systems **Author:** Rini Chakrabarti, Shilbhadra Dasgupta
Publisher: Wiley India **Year of Publication:** 2024 **ISBN:** 9788177228021
4. Database Programming Using SQL & PL/SQL (2nd Edition) **Author:** Dr. Sanjeev Sharma
Publisher: Wiley India **Year of Publication:** 2024 **ISBN:** 9789351199380
5. SQL, PL/SQL: The Programming Language of Oracle **Author:** Ivan Bayross **Publisher:** BPB Publications **Year of Publication:** 2023(4th Edition) **ISBN:** 9788176569644

Reference Books:

1. Oracle SQL and PL/SQL **Author:** Joel Murach **Publisher:** Murach **Year of Publication:** September 2024 (3rd Edition) **ISBN:** 978-1943873197
2. Oracle Database 12c PL/SQL Programming **Authors:** Michael McLaughlin **Publisher:** McGraw-Hill Education
Year of Publication: 2024(1st Edition) **ISBN:** 978-0071812443
3. Advanced Database Management System **Authors:** Dr. Sanjeev Sharma, Dr. Jitendra Agrawal, Dr. Shikha Agrawal **Publisher:** Wiley India **Year of Publication:** 2017(1st Edition) **ISBN:** 978-9351199380

List of Open-Source Software/learning website:

<https://www.oracle.com/tools/downloads/sqldev-downloads.html>

<https://www.w3schools.com>

<https://sqlitebrowser.org/>

<https://www.tutorialspoint.com>

<https://www.pgadmin.org/>

<https://dev.mysql.com/downloads/workbench/>

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Understand and explain fundamental database concepts including data, information, database systems, schema, instance, users, and advantages of DBMS over file systems.	2.Understand 1.Remember
CLO2	Apply database design techniques, transaction management, and SQL commands for creating and managing database objects and data.	3.Apply 2.Understand
CLO3	Implement and utilize database constraints and operators, Construct complex SQL queries, clauses and SQL functions	2.Understand 3.Apply 6.Create
CLO4	Perform different types of SQL joins, sub queries, indexing, and views to manage and retrieve data efficiently.	3.Apply 4. Analyze
CLO5	Explain and develop PL/SQL programs using block structures, cursors, procedures, functions, and triggers.	2.Understand 3. Apply 6.Create
CLO6	Understand and compare modern database technologies such as NoSQL, NewSQL, XML databases, and cloud-based data management systems	2.Understand 4.Analyze

Mapping of CLOs with Pos & PSOs

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CLO1	H	M	L	L	L	-	M	-	M	-	-	-	M	L
CLO2	H	H	H	M	H	-	M	-	M	-	-	-	H	M
CLO3	H	H	H	M	H	-	M	-	M	-	-	-	H	M
CLO4	H	H	H	M	H	-	M	-	M	-	-	-	H	M
CLO5	H	M	H	M	H	-	M	-	M	-	-	M	H	M
CLO6	H	M	M	M	H	-	H	-	M	M	-	M	H	H

H: High, M: Medium, L: Low