

Course Type	Course Code	Name of the Course	L	T	P	Credit
DE	OMED621	Data Base Management System	3	0	0	3

Prerequisites
Procedural and Object Oriented Programming, Data Structures and Algorithms
Course Objective
1. Understand the fundamental concepts, architecture, and types of Database Management Systems (DBMS) and the relational data model. 2. Gain proficiency in SQL for data definition, manipulation, and complex query formulation using advanced SQL techniques. 3. Apply formal query languages, ER modeling techniques, and normalization principles for effective relational database design. 4. Learn the principles of database application development, data storage mechanisms, file structures, indexing, and hashing methods. 5. Explore transaction management, serializability, concurrency control, recovery mechanisms, and query optimization techniques in DBMS.
Learning Outcome
1. Explain the structure and purpose of DBMS and describe how relational models represent data logically. 2. Write basic to advanced SQL queries including joins, subqueries, indexing, stored procedures, and views. 3. Design efficient ER diagrams and normalize database schemas up to BCNF using functional dependencies and relational algebra. 4. Demonstrate the implementation of storage organization, indexing techniques, and file access methods for data retrieval. 5. Analyze and evaluate transaction management concepts like serializability, concurrency control, and recovery to ensure database consistency.

Unit No.	Topics to be Covered	No. of Lecture Videos	Video Time (Minutes)	Learning Outcomes
1	Course Overview and Introduction to RDBMS	5	155	Understand fundamentals of databases, DBMS architecture, and relational data models.
2	Structured Query Language (SQL)	5	158	Write and execute SQL queries for data definition, manipulation, and retrieval.
3	Relational Algebra and Entity–Relationship Model	5	174	Apply relational algebra operations and design ER models for databases.
4	Relational Database Design and Normalization	5	166	Design efficient schemas using normalization and functional dependencies.
5	Application Development, Storage and File Structure	5	154	Understand database application development and physical storage structures.
6	Indexing, Hashing, and Query Processing	5	141	Apply indexing and hashing techniques and understand query execution strategies.
7	Query Optimization and Transactions	5	156	Understand transaction concepts, serializability, and query optimization methods.

8	Concurrency Control and Recovery Systems	5	175	Ensure database consistency using concurrency control and recovery techniques.
Total		40	1279	

Textbooks:

1. “Database System Concept” by Abraham Silberschatz, Henry F. Korth, and S. Sudarshan, 7th Edition, McGraw-Hill Education
2. “Database Management Systems” by: Raghu Ramakrishnan and Johannes Gehrke, 3rd Edition, McGraw-Hill

Reference Books:

1. “An Introduction to Database Systems” by: C.J. Date, 8th Edition, Addison-Wesley
2. “SQL: The Complete Reference” by: James R. Groff, Paul N. Weinberg, Andy Oppel, 3rd Edition, McGraw-Hill