

Course Title	Course Structure			Pre-Requisite
Database Management Systems	<b>L</b>	<b>T</b>	<b>P</b>	MS Excel
	<b>3</b>	<b>0</b>	<b>2</b>	

**Course Objective:** To provide knowledge about the principles, concepts and applications of Database Management Systems.

**Course Outcome (CO):**

1. To understand the concepts of DBMS and would have acquired skills to analyse the real-world problem domains in the context of DBMS and demonstrate the same through ER diagram.
2. To apply and demonstrate with understanding of relational query languages such as SQL, Relational Algebra and Relational Calculus.
3. To relate the concepts of inference rules, data constraints and normalization. Students would also have acquired skills to identify application of the same.
4. Familiar with basic database storage structures and access techniques: file and page organizations, indexing methods including B tree, and hashing. To appraise the basic issues of Transaction processing and Serializability.
5. To classify various concurrency control techniques and recovery procedures
6. Familiar with case studies regarding commercial database, Oracle platforms, Postgres and MYSQL.

S.No.	Content	Contact Hours
Unit 1	Introduction: Database system concepts and its architecture, Data models schema and instances, Data independence and database language and interface, Data definition languages, DML. Overall database structure. Data modeling using Entity Relationship Model: E.R. model concept, notation for ER diagrams mapping constraints, Keys, Concept of super key, candidate key, primary key generalizations, Aggregation, reducing ER diagrams to tables, extended ER model.	7
Unit 2	Relational Data Model and Language: Relational data model concepts, integrity constraints, Keys domain constraints, referential integrity, assertions, triggers, foreign key relational algebra, relational calculus, domain and tuple calculus, SQL data definition queries and updates in SQL.	7
Unit 3	Data Base Design: Functional dependencies, normal forms, 1NF, 2NF, 3NF and BCNF, multi-valued dependencies fourth normal form, join dependencies and fifth normal form. Inclusion dependencies, lossless join decompositions, normalization using FD, MVD and JDs, alternatives approach to database design.	6
Unit 4	File Organization, Indexing and Hashing Overview of file organization techniques,	8