

Details of Course:

Course Title	Course Structure			Pre-Requisite
MC 209 : Database Management System	L	T	P	NIL
	3	0	2	

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

Course Outcome (CO):

CO1	Describe the fundamental elements of relational database management systems and related concepts.
CO2	Explain the basic concepts of different data models, relational database design, relational algebra, and SQL and Design ER-models to represent real-life database applications.
CO3	Apply the concepts to design the relational database from the ER-model and formulate SQL and PL/SQL queries for implementation and maintenance of the database.
CO4	Improve the database design by performing the concept of normalization.
CO5	Apply basic database storage structures and access techniques like file and page organizations, indexing methods including B tree, and hashing for optimal database organization.

S. No.	Contents	Contact hours
1.	Introduction: Database system concepts and its architecture, Data models, schema and instances, Data independence and data base language and interface, Data definition languages, DML Data modeling using Entity Relationship Model: ER model concept, notation for ER diagrams mapping constraints, Keys, Concept of super key, candidate key, primary key generalizations, Aggregation, transforming ER diagrams to tables, extended ER model.	8
2.	Relational Data Model and Language: Relational data model concepts, integrity constraints, Keys domain constraints, referential integrity, assertions, triggers, Database language, Relational algebra, relational calculus, domain and tuple calculus, SQL data definition queries and updates in SQL.	9
3.	Database Design: Functional dependencies, normal forms, 1NF, 2NF, 3NF and BCNF, multi-valued dependencies, fourth normal form, join dependencies and fifth normal forms, loss less join decompositions, normalization using FD, MVD and JDS.	8
4.	File Organization, Indexing and Hashing: Basic concepts, Static Hashing, Dynamic Hashing, Ordered indices, Multi-level indexes, B-Tree index files, B+-Tree index files, Buffer Management.	8

5.	Transaction processing concepts: Transaction processing system, schedule and recoverability, Testing of serializability, serializability of schedules, conflict & view serializable schedule recovery from transaction failures, deadlock handling. Concurrency Control Techniques: Locking Techniques, time stamping protocols, multiple granularities and multi-version schemes.	9
	Total	42

Suggested Books:

S. No.	Name of Books/Authors/Publishers	Year of Publication
1.	Elmasri, Navathe, "Fundamentals of Database systems", Addison Wesley	2010, 6 th Edition
2.	Korth, Silbertz, Sudarshan, "Data base concepts", McGraw-Hill.	2019
3.	Ramakrishna, Gehkre, "Database Management System", McGraw-Hill	2003, 3 rd Edition