

Course Code	Course Name	Teaching Scheme (Hrs/week)			Credits Assigned			
		L	T	P	L	T	P	Total
MCA32	Database Management System	3	1	--	3	1	--	4
		Examination Scheme						
		ISE		MSE		ESE		
		10	30	100 (60% Weightage)				

Pre-requisite Course Codes	--	
Course Outcomes	CO1	Design an ER diagram and relational database.
	CO2	Apply normalization on the given database.
	CO3	Solve SQL and PL/SQL queries
	CO4	Analyze transaction and concurrency control mechanism.
	CO5	Understand storage, security and emerging trends in database systems.

Module No.	Unit No.	Topics	Ref.	Hrs.
1		Introduction to DBMS	3	5
	1.1	File system organization		
	1.2	Purpose of Database system		
	1.3	Data models types		
	1.4	Codd's rules		
	1.5	DBMS architecture		
	1.6	Database types		
2		ER and Relational model	1	5
	2.1	Entity set & Relationship set		
	2.2	Mapping cardinalities		
	2.3	EER features Designing of ER diagram		
	2.4	ER to Relational Model Designing		
3		Structured Query Language (SQL)	1	6
	3.1	Basic SQL (DDL,DML,DCL)		
	3.2	Intermediate SQL(Joins, Views, Transaction, Integrity constraints)		
	3.3	Advanced SQL (Functions, Triggers, Procedures, Packages)		
4		Query optimization, Normalization and Functional Dependencies	1	6
	4.1	Query processing steps		
	4.2	Evaluation of Query		
	4.3	Relational Optimization		
	4.4	Functional dependency and its types		
	4.5	Normal forms : 1NF, 2NF, 3NF, BCNF		
5		Transaction Management and Concurrency control	2	7
	5.1	ACID properties		
	5.2	Transaction states		
	5.3	Serializability and its types		

	5.4	Recoverability		
	5.5	Concurrency control mechanism		
	5.6	Lock based protocol		
	5.7	Timestamp based protocol		
6		Data storage and security	2	5
	6.1	Primary and Secondary storage devices		
	6.2	RAID levels		
	6.3	Introduction to database security		
	6.4	Discretionary and mandatory access control		
7		Emerging Systems	1,2	5
	7.1	Client/Server Model		
	7.2	Data Warehousing and Data Mining		
	7.3	Web Databases		
	7.4	Mobile Databases		
8		Database Tools : Case study	3	3
	8.1	Case studies based on different database tools like graph database tools (Neo4j, OrientDB, Titan), NoSQL, PostgreSQL		
			Total	42

References:

- [1] Henry F. Korth and S. Sudarshan, "Database System Concepts", McGraw Hill Education, Sixth edition.
- [2] Elmasri and Navathe, "Fundamentals of Database Systems", Pearson Education, Sixth edition.
- [3] C. J. Date, A. Kannan and S. Swamynathan, "An Introduction to Database Systems", Pearson Education, Eighth Edition