

SWARNANDHRA
COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)

SEETHARAMPURAM, NARSAPUR-534280, WG- DT, AP

DEPARTMENT OF MASTER OF COMPUTER APPLICATIONS

TEACHING PLAN

Course Code	Course Title	Year/Sem	Branch	Contact Hrs/Week	Academic Year
24MC1T03	Database Management Systems	I/I	MCA	6	2024-2025

COURSE OUTCOMES (CO): Students are able to

1. Illustrate the concept of databases, database managements. (K2)
2. Apply ER Modeling and Relational Modeling for designing simple databases. (K3)
3. Summarize the concepts related to relational model and SQL and Write database queries using relational algebra and structured query language statements. (K2)
4. Design and develop databases from the real world by applying the concepts of Normalization. (K6)
5. Outline the issues associated with Transaction Management and Recovery, Tree Structured and Hash-Based Indexing. (K2)

Unit	Outcome/ Blooms Level	TOPIC/ACTIVITY	Text Books	Contact HOURS	Delivery Method	
I	Illustrate the concept of databases, database management systems, database languages, database structures and their work (K2)	UNIT-I Overview of Database System			Chalk & Board, PPT	
		1.1	Introduction to Databases: Database System Applications, Purpose of Database Systems	T3		1
		1.2	View of Data, Database Languages	T3		1
		1.3	Relational Databases, Database Design, Data Storage and Querying	T3		1

		1.4	Transaction Management, Database Architecture	T3	1		
		1.5	Data Mining and Information Retrieval, Speciality Databases	T3	1		
		1.6	Database Users and Administrators, History of Database Systems	T3	1		
		1.7	Introduction to Database Design: Database Design and ER Diagrams	T3	1		
		1.8	Entities, Attributes and Entity Sets	T3	1		
		1.9	Relationships and Relationship Sets	T3	1		
		1.10	Additional Features of the ER Model	T3	1		
		1.11	Conceptual Design with the ER Model	T3	1		
		1.12	Extended ER features	T3	1		
		UNIT-II					
		Relational Model					
		2.1	Introduction to Relational Model: Integrity Constraints over Relations	T1	1		
		2.2	Enforcing Integrity Constraints	T1	1		
		2.3	Querying Relational Data	T1	1		
		2.4	Logical Database Design: ER to Relational	T1	1		
		2.3	Introduction to Views, Destroying/Altering Tables and Views	T1	1		
		2.4	Conceptual Design for Large Enterprises	T1	1		
		2.5	Relational Model: Introduction to the Relational Model	T1	1		
		2.6	Integrity Constraints over Relations	T1	1		
		2.7	Enforcing Integrity Constraints, Querying Relational Data	T1	1		
		2.8	Logical Database Design: ER to Relational	T1	1		
		2.9	Introduction to Views, Destroying/Altering Tables and Views	T1	1		
		2.10	Relational Algebra: Selection and Projection, Set Operations, Renaming	T1	1		
		2.11	Joins, Division, More Examples of Algebra Queries	T1	1		
		2.12	Relational Calculus: Tuple Relational Calculus, Domain Relational Calculus	T1	1		
		MID EXAM-1					
		UNIT-III					
		SQL: Queries, SQL Constraints, SQL Triggers					
		3.1	The Form of a Basic SQL Query	T1	1		
		3.2	UNION, INTERSECT and EXCEPT	T1	1		
II	Relational Modeling for Designing simple databases. (K3)					Chalk & Board	
III	Summarize SQL and Write database queries using relational algebra and structured						

	query language. (K2)	3.3	Nested Queries	T1	1	Chalk & Board PPT
		3.4	Aggregate Operators	T1	1	
		3.5	Null Values	T1	1	
		3.6	Complex Integrity Constraints in SQL	T1	1	
		3.7	Triggers	T1	1	
		3.8	Exceptions	T1	1	
		3.9	Procedures			
		3.10	Functions	T1	1	
		3.11	Normal Forms: Introduction to Schema Refinement	T1	1	
		3.12	Functional Dependencies	T1	1	
		4.1	Reasoning about FDs	T1	1	
		4.2	Normal Forms	T1	1	
		4.3	Properties of Decompositions, Normalization	T1	1	
IV	Design and develop databases from the real world by applying the concepts of Normalization, Transaction Management and Concurrency Control. (K6)	UNIT-IV Schema Refinement				Chalk & Board PPT with Video Demonstration
		4.4	Multivalued Dependencies	T3	1	
		4.5	Fourth Normal Form, Join Dependencies, Fifth Normal Form	T3	1	
		4.6	Lossless Join, Dependency preservation	T3	1	
		4.7	Transaction Management: Transaction Concepts, Transaction state	T3	1	
		4.8	Implementation of Atomicity and Durability, Concurrent Execution	T3	1	
		4.9	Serializability, Recoverability	T3	1	
		4.10	Concurrency Control: Lock-based Protocols: Locks, Granting of Locks	T3	1	
		4.11	Two Phase Locking Protocol, Implementation of locking	T3	1	
		4.12	Timestamp-Based Protocols: Time Stamps	T3	1	
		5.1	Time Stamp Ordering protocol	T3	1	
		5.2	Thomas Write Rule	T3	1	
		5.3	Validation-Based Protocols	T3	1	
V	Outline the issues associated Tree Structured and Hash-Based Indexing. (K2)	UNIT-V Overview of Storage and Indexing				Chalk & Board PPT,
		5.4	Data on External Storage	T2	1	
		5.5	File organization and indexing: Clustered Indexes, Primary and Secondary Indexes	T2	1	
		5.6	Index Data Structures: Hash and Tree based indexing, Comparison of File organizations	T2	1	
		5.7	Tree Structured Indexing: Intuitions for Tree Indexes, Indexed Sequential Access Method (ISAM)	T2	1	
		5.8	B+ Trees: A Dynamic Index	T2	1	

		Structure,			
	5.9	Search, Insert, Delete	T2	1	
	5.10	Duplicates, B+ Trees in Practice	T2	1	
MID EXAM-2					

Course Beyond Syllabus		JDBC connectivity using databases.	Web Resources	1	
MID EXAM 2					
TOTAL CLASSES				68	

Recommended Text Books for Reading:

- T1: Database Management Systems, 3/e Raghu Rama Krishnan, Johannes Gehrke, McGraw-Hill
T2: Database System Concepts, 6/e, Abraham Siliberschaltz, Henry F.Korth, S. Sudarshan, McGraw hill
T3: Database Systems, 9/e, Carlos Coronel, Steven Morris, PeterRob, Cengage

Reference Text Books:

- R1: Introduction to Database Systems, 8/e, CJ Date, Pearson
R2: Database Systems, 6/e RamezElmasri, ShamkantB.Navathe, Pearson

WEB RESOURCES

W1: <https://nptel.ac.in/coursest/106105175>

W2: https://onlinecourses.swayam2.ac.in/cec22_cs18/preview

W2: <https://cs186berkeley.net/>

W2: <https://www.youtube.com/playlist?list=PL52484DF04A264E59>

W2: <https://courses.cs.washington.edu/courses/cse414/17au/calendar/lecturelist.html>

W2: <https://www.db-book.com/slides-dir/index.html>

P. Venkanna

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