



SWARNANDHRA

COLLEGE OF ENGINEERING & TECHNOLOGY

(AUTONOMOUS)

Accredited by National Board of Accreditation, AICTE, New Delhi, Accredited by NAAC with "A" Grade – 3.32 CGPA, Recognized under 2(f) & 12(B) of UGC Act 1956, Approved by AICTE, New Delhi, Permanent Affiliation to JNTUK, Kakinada Seetharampuram, W G DT, Narsapur-534280, (Andhra Pradesh)

DEPARTMENT OF INFORMATION TECHNOLOGY

TEACHING PLAN

Course Code	Course Title	Semester	Branch	Contact Periods /Week	Academic Year	Date of commencement of Semester
23IT4T01	Database management systems	IV	IT	5	2025-26	10-12-2025

COURSE OUTCOMES

1	Understand database systems, characteristics, architectures and E-R modeling. [K2]
2	Learn the relational model, constraints and basic SQL operations.[K2]
3	Perform advanced SQL queries and manage relational databases. [K6]
4	Apply normalization techniques and understand functional dependencies. [K3]
5	Grasp transaction properties, concurrency controls, recovery, and indexing methods.[K5]

UNIT	Out Comes / Bloom's Level	Topics No.	Topics/ Activity	Text Book/ Reference	Contact Hour	Delivery Method
I	CO – 1	1.1	Database system, Characteristics (Database Vs File System), Database Users	T1,T2	1	Chalk & Board Power point presentation Assignment Test
		1.2	Advantages of Database systems, Database applications	T1,T2	1	
		1.3	Brief introduction of different Data Models; Concepts of Schema, Instance and data independence	T1,T2	1	
		1.4	Three tier schema architecture for data independence;	T1,T2	1	
		1.5	Database system structure, environment, Centralized and Client Server architecture for the database.	T1,T2	1	
		1.6	Entity Relationship Model: Introduction, Representation of entities	T1,T2	1	
		1.7	Representation of entity set	T1,T2	1	
		1.8	Representation of attributes	T1,T2	1	
		1.9	relationship, relationship set	T1,T2	1	
		1.10	constraints, sub classes, super class,	T1,T2	1	
		1.11	inheritance, specialization	T1,T2	1	



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		1.12	generalization using ER Diagrams.	T1,T2	1	
				Total	12	
II	CO – 2	2.1	Relational Model: Introduction to relational model	T1,R1	1	Chalk & Board
		2.2	concepts of domain, attribute, tuple, relation	T1,R1	1	
		2.3	importance of null values	T2,R2	1	
		2.4	constraints (Domain, Key constraints, integrity constraints)	T2,R2	1	
		2.5	Importance constraints (Domain, Key constraints, integrity constraints)	T2,R2	1	
		2.6	Relational Algebra	T2,R2	1	Power point presentation
		2.7	Relational Calculus.	T2,R2	1	
		2.8	Simple Database schema	T1,T2	1	Assignment
		2.9	data types	T1,T2	1	
		2.10	table definitions (create, alter)	T1,T2	1	Test
		2.11	different DML operations (insert, delete, update).	T1,T2	1	
		2.12	Creating employee database	T1,T2	1	
		2.13	Creating student database	T1,T2	1	
		2.14	Creating of databases using ddl and dml	T1,T2	1	
				Total	14	
III	CO – 3	3.1	Basic SQL querying (select and project) using where clause	T1,T2	1	Chalk & Board
		3.2	arithmetic & logical operations	T1,T2	1	
		3.3	SQL functions(Date and Time)	T1,T2	1	
		3.4	SQL functions (Numeric)	T1,T2	1	
		3.5	SQL functions(String conversion)	T1,T2	1	
		3.6	Creating tables with relationship	T1,T2	1	
		3.7	implementation of key and integrity constraints	T1,T2	1	Power point presentation
		3.8	nested queries	T1,T2	1	
		3.9	sub queries	T1,T2	1	Assignment
		3.10	grouping, aggregation	T1,T2	1	
		3.11	ordering	T1,T2	1	Test
		3.12	implementation of different types of joins	T1,T2	1	
		3.13	view(updatable and non-updatable)	T1,T2	1	
		3.14	view(updatable and non-updatable)	T1,T2	1	
		3.15	relational set operations	T1,T2	1	



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Total					15	
IV	CO – 4	4.1	Schema Refinement (Normalization):Purpose of Normalization or schema refinement	T1,T2	1	Chalk & Board Power point presentation Assignment Test
		4.2	Purpose of Normalization or schema refinement	T1,T2	1	
		4.3	concept of functional dependency	T1,T2	1	
		4.4	normal forms based on functional dependency	T1,T2	1	
		4.5	Lossless join and dependency preserving decomposition, (1NF, 2NF and 3 NF)	T1,T2	1	
		4.6	Lossless join and dependency preserving decomposition, (1NF, 2NF and 3 NF)	T1,T2	1	
		4.7	Lossless join and dependency preserving decomposition, (1NF, 2NF and 3 NF)	T1,T2	1	
		4.8	concept of surrogate key	T1,T2	1	
		4.9	Boyce-Codd normal form(BCNF)	T1,T2	1	
		4.10	MVD	T1,T2	1	
		4.11	MVD	T1,T2	1	
		4.12	Fourth normal form(4NF)	T1,T2	1	
		4.13	Fifth Normal Form (5NF)	T1,T2	1	
Total					13	
V	CO – 5	5.1	TransactionConcept: TransactionState	T1,R1	1	Chalk & Board Power point presentation Assignment Test
		5.2	ACID properties	T1,R1	1	
		5.3	Concurrent Executions	T1,R1	1	
		5.4	Serializability, Testing for Serializability	T1,R1	1	
		5.5	Recoverability	T1,R1	1	
		5.6	Implementation of Isolation,	T1,R1	1	
		5.7	lockbased, timestampbased	T1,R1	1	
		5.8	optimistic, concurrency protocols	T1,R1	1	
		5.9	Deadlocks	T1,R1	1	
		5.10	Failure Classification, Storage.Recovery and Atomicity,	T1,R1	1	



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			Recovery algorithm.			
		5.11	Introduction to Indexing Techniques: B+ Trees	T1,R1	1	
		5.12	operations on B+ Trees	T1,R1	1	
		5.13	Hash Based Indexing	T1,R1	1	
Total					13	
CUMULATIVE PROPOSED PERIODS					67	

Text Books:

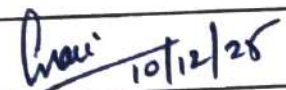
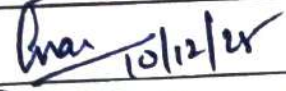
S. No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
1	Raghurama Krishnan, Johannes Gehrke, Database Management Systems, 3 rd edition, TMH (For Chapters 2, 3, 4) 2002.
2	Silberschatz, Korth, Sudarsan, Database System Concepts, 5 th edition, TMH (For Chapter 1 and Chapter 5), 2019.

Reference Books:

S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
1	C J Date, Pearson, Introduction to Database Systems, 8 th edition, 2019.
2	Ramez Elmasri, Shamkant B. Navathe Pearson Database Management System, 6 th edition, 2009.
3	Corlos Coronel, Steven Morris, Peter Robb, Cengage Learning. Database Principles Fundamentals of Design Implementation and Management

Web Details:

1	https://nptel.ac.in/courses/106/105/106105175/
2	https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_012758066672820224_56_shared/overview

	Name	Signature with Date
i. Faculty	Mrs. V. Sivani	 10/12/25
ii. Module Coordinator	V. Sivanig	 10/12/25
iii. Programme Coordinator	Dr. RVVS Prasad	 10/12/25


Principal