



# 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 Seethampuram, W.G.D.T., 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	CS	6	2024-25	16-12-2024

### 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  Power point presentation  Assignment  Test
		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	
		2.7	Relational Calculus.	T2,R2	1	
		2.8	Simple Database schema	T1,T2	1	
		2.9	data types	T1,T2	1	
		2.10	table definitions (create, alter)	T1,T2	1	
		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  Power point presentation  Assignment  Test
		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	
		3.8	nested queries	T1,T2	1	
		3.9	sub queries	T1,T2	1	
		3.10	grouping, aggregation	T1,T2	1	
		3.11	ordering	T1,T2	1	
		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	Transaction Concept: Transaction State	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, lockbased, timestampbased	T1,R1	1		
		5.7	optimistic, concurrency protocols	T1,R1	1		
		5.8	Deadlocks	T1,R1	1		
		5.9	Failure Classification, Storage, Recovery and Atomicity,	T1,R1	1		
		5.10					





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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	
<b>CUMULATIVE PROPOSED PERIODS</b>					<b>67</b>	

### Text Books:

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

### Reference Books:

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

### Web Details:

1	<a href="https://nptel.ac.in/courses/106/105/106105175/">https://nptel.ac.in/courses/106/105/106105175/</a>
2	<a href="https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_012758066672820224_56_shared/overview">https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_012758066672820224_56_shared/overview</a>

	Name	Signature with Date
i. Faculty	Mrs. V. Sivani	16/12/24
ii. Module Coordinator	Dr. RVVSV Prasad	16/12/24
iii. Programme Coordinator	Dr. RVVSV Prasad	16/12/24

*A. M. V.*  
Principal