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 ARTIFICIAL INTELIGENCE & DATA SCIENCE

TEACHING PLAN

Course Code	Course Title	Semester/ Regulation	Branch	Contact Periods /Week	Academic Year	Date of commencement of Semester
23CS3T03	DATABASE MANAGEMENT SYSTEMS	II / (R23)	AI&DS	5	2024-2025	30-7-2024

COURSE OBJECTIVES

1	Introduce database management systems and to give a good formal foundation on the relational model of data and usage of Relational Algebra
2	Introduce the concepts of basic SQL as a universal Database language.
3	Demonstrate the principles behind systematic database design approaches by covering conceptual design, logical design through normalization
4	Provide an overview of physical design of a database system, by discussing Database indexing techniques and storage techniques

COURSE OUTCOMES

1	Understand database systems, characteristics, architectures, and ER modeling.
2	Learn the relational model, constraints, and basic SQL operations
3	Perform advanced SQL queries and manage relational databases
4	Apply normalization techniques and understand functional dependencies
5	Grasp transaction properties, concurrency control, recovery, and indexing methods.

UNIT	Out Comes/ Bloom's Level	Topics No.	Topics/ Activity	Text Book/ Reference	Contact Hour	Delivery Method
I	CO – 1	1.1	Introduction to DBMS	T1,T2	2	Chalk ,talk
		1.2	Characteristics	T1,T2	1	Chalk ,talk
		1.3	Database Vs File System	T1,T2	2	Chalk ,talk
		1.4	Database Users	T1,T2	1	Chalk ,talk
		1.5	Advantages of Database systems	T1,T2	1	Chalk ,talk
		1.6	Database applications	T1,T2	1	Chalk ,talk
		1.7	Introduction of different Data Models	T1,T2	2	Chalk ,talk

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		1.8	Concepts of Schema	T1,T2	2	Chalk ,talk
		1.9	Instance and data independence	T1,T2	1	Chalk ,talk
		1.10	Three tierschema architecture for data independence	T1,T2	2	Chalk ,talk
		1.11	Database system structure, Environment	T1,T2	1	Chalk ,talk
		1.12	Centralized and Client Server architecture for the database.	T1,T2	1	Chalk ,talk
		1.13	Introduction to ER Model , Representation of entities	T1,T2	2	Chalk ,talk
		1.14	attributes Entity set, relationship, relationship set, constraints, sub classes,	T1,T2	1	Chalk ,talk
		1.15	super class, inheritance, specialization, generalization using ER Diagrams	T1,T2	1	Chalk ,talk
Total:					18	
II	CO – 2	2.1	Introduction to relational model	T1,R2	1	Chalk ,talk
		2.2	concepts of domain, attribute, tuple, relation,	T1,R2	2	Chalk ,talk
		2.3	importance of null values, constraints (Domain, Key constraints, integrity constraints) and their importance,	T1,R2	3	Chalk ,talk
		2.4	Relational Algebra, Relational Calculus.	T1,R2	2	Chalk ,talk
		2.5	BASIC SQL: Simple Database schema, data types	T1,R2	2	Chalk ,talk
		2.6	Table definitions (create, alter)	T1,R2	1	Chalk ,talk
		2.7	Different DML operations (insert, delete, update)	T1,R2	2	Chalk ,talk
Total:					12	
III	CO – 3	3.1	Basic SQL querying (select and project) using where clause, arithmetic & logical operations,	T1,R2	2	Chalk ,talk
		3.2	SQL functions(Date and Time, Numeric, String conversion).	T1,R2	2	Chalk ,talk
		3.3	Creating tables with relationship	T1,R2	2	Chalk ,talk
		3.4	implementation of key and integrity constraints	T1,R2	2	Chalk ,talk

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Unit	CO	No.	Topic	Text/Ref	Periods	Method
		3.5	Nested queries, sub queries, grouping,	T1,R2	2	Chalk ,talk
		3.6	aggregation, ordering,	T1,R2	1	Chalk ,talk
		3.7	Implementation of different types of joins	T1,R2	1	Chalk ,talk
		3.8	View(updatable and non-updatable),	T1,R2	1	Chalk ,talk
		3.9	Relational set operations	T1,T2	1	Chalk ,talk
			Total		14	
IV	CO – 4	4.1	Schema Refinement	T1,R2	2	Chalk ,talk
		4.2	(Normalization):Purpose of Normalization or schema refinement,	T1,R2	2	Chalk ,talk
		4.3	concept of functional dependency, normal forms based on functional dependency Lossless join and dependency preserving decomposition, (1NF, 2NF and 3 NF),	T1,R2	3	Chalk ,talk
		4.4	concept of surrogate key, Boyce-Codd normal form(BCNF),	T1,R2	2	Chalk ,talk
		4.5	MVD, Fourth normal form(4NF), Fifth Normal Form (5NF).	T1,R2	3	Chalk ,talk
			Total		12	
V	CO-5	5.1	Transaction Concept: Transaction State, ACID properties,	T1,T2	2	Chalk,talk
		5.2	Concurrent Executions, Serializability, Recoverability	T1,T2	2	Chalk ,talk
		5.3	Implementation of Isolation, Testing for Serializability,	T1,T2	2	Chalk ,talk
		5.4	lock based, time stamp based, optimistic, concurrency protocols,	T1,T2	2	Chalk ,talk
		5.5	Deadlocks, Failure Classification, Storage,	T1,T2	2	Chalk ,talk
		5.6	Recovery and Atomicity, Recovery algorithm.	T1,T2	3	Chalk ,talk
		5.7	Introduction to Indexing Techniques: B+ Trees, operations on B+Trees,	T1,T2	3	Chalk ,talk
		5.8	Hash Based Indexing	T1,T2	2	Chalk ,talk
			Total		15	
			CUMULATIVE PROPOSED PERIODS		71	

Text Books:

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S.No	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
1	Raghurama Krishnan, Johannes Gehrke, TMH (For Chapters 2, 3, 4) Database Management Systems, 3rd edition, 2002
2	Silberschatz, Korth, Sudarsan, TMH (For Chapter 1 & 5) Database System Concepts, McGraw-Hill Education 5th edition, 2005

Reference Books:

S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
1	C J Date, Introduction to Database Systems, 8th edition, Pearson. 2006
2	RamezElmasri, Shamkant B. Navathe, Database Management System, 6th edition Pearson, 2010

Web Details:

	https://nptel.ac.in/courses/106/105/106105175/ https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_0127580666728202 2456_shared/overview

		Name	Signature with Date
i.	Faculty	Mr. P.Venkatesh	
ii.	Course Coordinator	Mr. V.Subrahmanyam	
iii.	Module Coordinator	Dr. G.Sudhakar	
iv.	Programme Coordinator	Dr. B.Rama Krishna	

Principal