SCHEME OF COURSE WORK

Course Details:

Course Title	**: Database Management Systems**		
Course Code	**: 15CT1108**	**L T P C**	**3 0 0 3**
Program:	**: B.Tech.**		
Specialization	**: Information Technology, Computer Science Engineering**		
Semester	**: IV**		
Prerequisites	**: NIL**		
Courses to which it is a prerequisite	**: Data Mining & Data Warehousing , Distributed Database**		

Course Outcomes (COs):

At the end of the course the student will be able to

1	Design Entity Relationship models.
2	Distinguish procedural and non-procedural query languages.
3	Design database schema using normalization
4	Explain lock-based, time stamping and tree-based protocols.
5	Illustrate Database Recovery methods.

Course Outcome Versus **Program Outcomes:**

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO-1	2		2		3						3	3	3		
CO-2	3		3		2						2		3		
CO-3	3	3	2	3	2						2		3		
CO-4	3		2		2						2		3		
CO-5	3		2		2						2		3		

S - Strongly correlated, *M* - *Moderately* correlated, *Blank* - *No correlation*

Assessment Methods:	Assignment / Quiz / Seminar / Case Study / Mid-Test / End Exam

Teaching-Learning and Evaluation

Week	Topic / Contents	Course outcome	Sample Questions	Teaching Learning Strategy	Assesment Method
1	History of Data Base Systems and its Applications Data base system vs File System View of Data – Data Abstraction Instances and schemas, Data Models – the ER model Relational model – other models	CO-1	Explain the advantages of DBMS over file systems Explain about E-R model	Teaching	Assignment Quiz
2	Database languages – DDL – DML Transaction management – data base system structure Storage manager – the query processor	CO-2	Explain about the structure of DBMS Differentiate database languages	Teaching	assignment
3	Data base design and ER diagrams Beyond ER design entities Attributes and entity sets Relationships and Relationship Sets Additional features of ER model Conceptual design with the ER model Conceptual design for large enterprises.	CO-1	Explain about the conceptual design of E-R model	Teaching And Drawing E-R diagrams from scenario's	Quiz and Mid
4	Introduction to the relational model Integrity constraint over relations Enforcing integrity constraints – querying relational data Logical data base design – introduction to views Destroying /altering tables and views.	CO-1	Explain about the integrity constraints . What is view and explain in detail	Teaching	Assignment
5	Relational algebra – selection and projection set operations	CO-2	Explain about the types of joins	Teaching	Assignment Mid

	Renaming – joins – division – examples of algebra overviews				
6	Relational calculus – tuple relational calculus Domain relational calculus	CO-2	Explain about the Tuple Relational calculus	Teaching	Mid
7	Schema refinement – problems caused by redundancy Decompositions – problem related to decomposition Reasoning about FDS – FIRST Normal form	CO-3	Explain about the importance of normalization with suitable example	Teaching	Mid
8	SECOND Normal form THIRD Normal forms BCNF – lossless join decomposition	CO-3	What is BCNF and explain in detail	Teaching	Mid
MID EXAM-1					
9	Schema refinement in data base design Multi valued dependencies – FOURTH Normal form.	CO-3	Explain about multi valued dependencies Explain about the importance of schema refinement	Teaching	Assignment
10	Transaction concept- Simple Transaction model-Storage Structure Transaction state-implementation of atomicity and durability Isolation, Concurrent – Executions	CO-4	What is Transaction. Explain about ACID properties in detail with suitable examples	Teaching	Mid -2 Quiz
11	Serializability- recoverability Implementation of Isolation Transactions as SQL statements,Concurrency Control : lock –based protocols	CO-4	Explain about concurrency control Explain about lock based protocols	Teaching	Mid -2 Quiz Assignment
12	Dead lock Handling-Timestamp based protocols validation- based protocols –	CO-4	What is dead lock and explain about handling of dead lock	Teaching	Mid-2 Quiz
13	Multi version schemes Insert, delete and predicate operations Multiple granularity	CO-4	Write about multiple granularity	Teaching	Assignment
14	Recovery and atomicity – log – based recovery Recovery with concurrent transactions Buffer management	CO-5	Explain about buffer management? Explain about log-based recovery	Teaching	Assignment Mid-2
15	Failure with loss of nonvolatile	CO-5	Explain about different raid	Teaching	Assignment

	storage-advance recovery systems Remote backup systems Data on external storage – overview of physical storage media - RAID		levels		
16	File organization and indexing – Data Dictionary Storage Cluster indexes, primary and secondary indexes Index data structures – Hash based indexing	CO-5	Explain about File organization and indexing? Explain about hash based indexing	Teaching	Mid-2 Quiz
17	Tree base indexing – B+ trees: a dynamic index structure.	CO-5	Explain about B+ trees?	Teaching	Assignment Mid-2
MID EXAM-2					