

(ELECTIVE – C/I)**4/4 B.Tech. SEVENTH SEMESTER****EE7T5C****DATABASE MANAGEMENT SYSTEMS****Credits: 3****Lecture: 3 periods/week****Internal assessment: 30 marks****Tutorial: 1 period /week****Semester end examination: 70 marks****Course Objectives:**

- The main objective of this course is to enable students to the fundamental concepts of database analysis and design.
- To recognize the importance of database analysis and design in the implementation of any Database application and to understand the process of drawing the ER-Diagrams.
- It also gives the knowledge of the roles of transaction processing and concurrency control.

Course Outcomes:

1. Understand the basic principles of database management systems.
2. Draw Entity-Relationship diagrams to represent simple database application scenarios.
3. Write SQL queries for a given context in relational database.
4. Discuss normalization techniques with simple examples.
5. Describe transaction processing and concurrency control concepts.

UNIT I

Introduction to Databases: Characteristics of the Database Approach, Advantages of using the DBMS Approach, A Brief History of Database Applications.

Overview of Database Languages and Architectures: Data Models, Schemas and Instances, Three-Schema Architecture and Data Independence, Database Languages and Interfaces, Database System environment, Centralized and Client-Server Architecture for DBMSs

UNIT II

Conceptual Data Modeling : High-Level Conceptual Data Models for Database Design, A Sample Database Application, Entity Types, Entity Sets, Attributes and Keys, Relationship Types, Relationship Sets, Roles, and Structural Constraints, Weak Entity Types, ER Diagrams, Naming Conventions and Design Issues, Relationship Types of Degree Higher Than Two.

UNIT III

Relational Model: The Relational Model Concepts , Relational Model Constraints and Relational Database Schemas.

SQL :Data Definition and data types, Constraints, Basic retrieval Queries, INSERT, DELETE AND UPDATE statements and Views(Virtual Tables) in SQL.

UNIT IV

Database Design Theory : Functional Dependencies, Normal forms based on Primary Keys, Second and Third Normal Forms, Boyce-Codd Normal Form.

UNIT V

Transaction Processing: Introduction, Transaction and System Concepts, Desirable Properties of Transactions, Transaction Support in SQL.

Concurrency Control: Two-phase locking techniques for concurrency control, Concurrency control based on Timestamp Ordering

Learning Resources

Text Book:

Database Systems Models, Languages, Design and Application Programming, 6th Edition, Ramez Elmasri , Shamkant B.Navathe , Pearson.