EE7T5A   **Data Base Management System   Credits: 4**
(Elective – I)

Lecture: 4 periods/week   **Internal assessment: 30 marks**
Tutorial: 1 period /week   **Semester end examination: 70 marks**-----------

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Course Objectives:

- The main objective of this course is to enable students to the fundamental concepts and data base analysis, design and some implementations.
- To recognize the importance of database analysis and design in the implementation of any Data base application and to understand the process drawing the ER-Diagrams, and how to perform the normalization process of relations and then producing the final ER-Diagram of any database application before implementation., Understanding the types of attributes, primary keys, foreign keys, super keys … etc.
- It also gives the knowledge the roles of transaction processing and concurrency control in a modern DBMS; it includes query processing, security and integrity.

Course Outcomes:

- Understand the Database approaches, Data Models, types of Languages and Interfaces that DBMSs support.
- Understand the Formal Relational languages and instructs SQL database language.
- Understand the different issues involved in the design and schema refinement.
- Develop the File Organization & Indexing.
- Understand the transaction management system, Concurrency techniques, and

  Database Recovery techniques.

  a. Since every application we use has to store, process and retrieve data,

  b. This course is of significant importance to real life applications.

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
Relational Model: The Relational Model Concepts , Relational Model Constraints and   Relational Database Schemas.
SQL : Data Definition, Constraints, and Basic Queries and Updates,Views(Virtual Tables) in SQL.

UNIT – III
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.

UNIT –IV
ER-Diagrams:
Refining the ER Design, ER Diagrams, Naming Conventions and Design Issues, Relationship Types of Degree Higher Than Two.
Relational Database Design Using ER-to-Relational Mapping.

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

UNIT – VI

File Organization & Indexing: Secondary Storage Devices, Buffering of Blocks, Placing File Records on Disk, Operations on Files, Files of Unordered Records and Ordered Records, Hashing Techniques, Disk Access using RAID Technology, Types of Single Level Ordered Indexes, Multilevel Indexes.

UNIT – VII
Transaction Processing: Introduction, Transaction and System Concepts, Desirable Properties of Transactions, Characterizing Schedules Based on Recoverability & Serializability, Transaction Support in SQL.

UNIT – VIII
Database Recovery: Recovery Concepts, Recovery Techniques Based on Deferred Update and Immediate Update, Shadow Paging, The ARIES Recovery Algorithm.

TEXT BOOKS:
DATABASE SYSTEMS Models, Languages, Design and Application Programming, **6th Edition, Ramez Elmasri ,Shamkant B.Navathe , Pearson**.

REFERENCE BOOKS:
1.Data base System Concepts, 5th Edition, Abraham Silberschatz, Henry F
                                     Korth, S.Sudarshan,Mc Graw Hill.
2.Data base Management Systems, 3rd Edition, Raghurama Krishnan, Johannes Gehrke, TMH
3.Introduction to Database Systems, 8th Edition , C.J.Date, Pearson.