DATABASE MANAGEMENT SYSTEMS

Semester	Course Code	Course Title	Hours	Credits
III	**C3**	**DATABASE MANAGEMENT SYSTEMS**	**60**	**3**

Course Objective:
The objective of the course is to introduce the design and development of databases with special emphasis on relational databases.

Course Learning Outcomes:
On completing the subject, students will be able to:
1. Gain knowledge of Database and DBMS.

2. Understand the fundamental concepts of DBMS with special emphasis on relational data model.

3. Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database

4. Model database using ER Diagrams and design database schemas based on the model.

5. Create a small database using SQL.

6. Store, Retrieve data in database.

UNIT I
Overview of Database Management System: Introduction to data, information, database, database management systems, file-based system, Drawbacks of file-Based System, database approach, Objectives of DBMS, Classification of Database Management Systems, advantages of database approach, limitations of database approach, Various Data Models, Components of Database Management System, three schema architecture of database.

UNIT II
Entity-Relationship Model: Introduction, the building blocks of an entity relationship diagram, classification of entity sets, attribute classification, relationship degree, relationship classification, reducing ER diagram to tables, enhanced entity-relationship model (EER model), generalization and specialization, **IS A** relationship and attribute inheritance, multiple inheritance, constraints on specialization and generalization, advantages of ER modelling.

UNIT III
Relational Model: Introduction, CODD Rules, relational data model, concept of key, relational integrity, relational algebra, relational algebra operations, advantages of relational algebra, limitations of relational algebra, relational calculus, tuple relational calculus, domain relational Calculus (DRC). Functional dependencies and normal forms up to 3rd normal form.

UNIT IV
Structured Query Language: Introduction, History of SQL Standard, Commands in SQL, Data Types in SQL, Data Definition Language, Selection Operation, Projection Operation, Data Manipulation Language, Table Modification Commands, Aggregate functions, Join Operation, Set Operations, View, and Nested Queries.

UNIT V
PL/SQL: Introduction, Shortcomings of SQL, Structure of PL/SQL, PL/SQL Language Elements, Data Types, Operators Precedence, Control Structure, Steps to Create a PL/SQL, Program, Iterative Control, Procedure, Function, Database Triggers, Types of Triggers, Cursors, Packages.

BOOKS:

1. Database System Concepts by Abraham Silberschatz, Henry Korth, and S. Sudarshan, McGrawhill

2. Database Management Systems by Raghu Ramakrishnan, McGrawhill

3. Principles of Database Systems by J. D. Ullman

4. Fundamentals of Database Systems by R. Elmasri and S. Navathe

5. SQL: The Ultimate Beginners Guide by Steve Tale.

RECOMMENDED CO-CURRICULAR ACTIVITIES:
(Co-curricular activities shall not promote copying from text book or from others work and shall encourage self/independent and group learning)
A. Measurable

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)

2. Student seminars (on topics of the syllabus and related aspects (individual activity))

3. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams))

4. Study projects (by very small groups of students on selected local real-time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity
B. General

1. Group Discussion

2. Try to solve MCQ's available online.

3. Others

RECOMMENDED CONTINUOUS ASSESSMENT METHODS:
Some of the following suggested assessment methodologies could be adopted;
1. The oral and written examinations (Scheduled and surprise tests),

2. Closed-book and open-book tests,

3. Practical assignments and laboratory reports,

4. Observation of practical skills,
5. Individual and group project reports like Create your college database for placement purpose.

6. Efficient delivery using seminar presentations,

7. Viva voce interviews.

8. Computerized adaptive testing, literature surveys and evaluations,

9. Peers and self-assessment, outputs form individual and collaborative work