III Year I Semester	L	T	P	C
17CS544	3	1	0	3

DATABASE MANAGEMENT SYSTEMS
(Open Elective-I)

Objectives:
To learn the principles of systematically designing and using large scale Database Management Systems for various applications.

UNIT-I: An Overview of Database Management, Introduction- What is Database System? What is Database-Why Database- Data Independence- Relational database Systems and Others-Summary.
Database system architecture, Introduction- The Three Levels of Architecture-The External Level- the Conceptual Level- the Internal Level- Database Administrator-The Database Management Systems- Client/Server Architecture.

UNIT-II:
The E/R Models, The Relational Model, Introduction to Database Design, Database Design and E-R Diagrams-Entities ,Attributes, and Entity Sets-Relationship and Relationship Sets-Conceptual Design With the E-R Models, The Relational Model Integrity Constraints Over Relations- Key Constraints –Foreign Key Constraints-General Constraints. Relational Algebra-Selection and Projection- Set Operation, Renaming – Joins- Division.

UNIT-III:
Queries, Constraints, Triggers: The Form of Basic SQL Query, Union, Intersect, and Except, Nested Queries, Aggregate Operators, Null Values, Complex Integrity Constraints in SQL, Triggers and Active Database.

UNIT-IV:
Schema Refinement (Normalization) : Purpose of Normalization or schema refinement, concept of functional dependency, normal forms based on functional dependency(1NF, 2NF and 3 NF), Boyce-codd normal form(BCNF), Lossless join and dependency preserving decomposition, Fourth normal form(4NF).

UNIT-V:
Transaction Management and Concurrency Control: Transaction, properties of transactions, Transaction management with SQL using commit rollback and save point. Concurrency control with locking methods : lock granularity, lock types, two phase locking protocol for ensuring serializability.

UNIT-VI: Overview of Storages and Indexing, Data on External Storage- File Organization and Indexing – Clustered Indexing – Primary and Secondary Indexes, Index Data Structures

OUTCOMES

- Describe a relational database and object-oriented database.
- Create, maintain and manipulate a relational database using SQL
- Describe ER model and normalization for database design.
- Examine issues in data storage and query processing and can formulate appropriate solutions.
- Understand the role and issues in management of data such as efficiency, privacy, security, ethical responsibility, and strategic advantage.
- Design and build database system for a given real world problem

TEXT BOOKS:

1. Introduction to Database Systems, CJ Date, Pearson
2. Data base Management Systems, Raghurama Krishnan, Johannes Gehrke, TATA McGraw Hill 3rd Edition
3. Database Systems - The Complete Book, H G Molina, J D Ullman, J Widom Pearson

REFERENCES BOOKS:

1. Data base Systems design, Implementation, and Management, Peter Rob & Carlos Coronel 7th Edition.
2. Fundamentals of Database Systems, Elmasri Navate Pearson Education
3. Introduction to Database Systems, C.J.Date Pearson Education 10. Shailaja Gajjala and Usha Munipalle, Univerties press, 2015