II B.Tech - II Semester
(17CS404) DATABASE MANAGEMENT SYSTEMS

Int. Marks	Ext. Marks	Total Marks		L	T	P	C
40	60	100		3	1	-	3

Pre-Requisites: Discrete Structures, Data structures

Course 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

Course Outcomes:

CO-1	Understand architecture of database systems.	L2
CO-2	Apply Relational Model to design and manipulate a Database.	L3
CO-3	Apply Queries, Constraints, Triggers on databases.	L3
CO-4	Design a Database using Normalization techniques.	L3
CO-5	Determine Database transactions as per concurrency and ACID properties.	L2
CO-6	Evaluate methods for storing and indexing Database Files.	L5

CO-PO/PSO Mapping Matrix:

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3
CO-1	2	3	3	2	2	-	-	-	-	-	-	-	1	1	-
CO-2	2	3	3	2	2	-	-	-	-	-	-	-	1	1	-
CO-3	2	2	3	2	2	-	-	-	-	-	-	-	1	1	-
CO-4	2	3	3	2	2	-	-	-	-	-	-	-	1	1	-
CO-5	2	2	3	2	2	-	-	-	-	-	-	-	1	1	-
CO-6	2	2	2	2	2	-	-	-	-	-	-	-	1	1	-

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, Universities press, 2015