COURSE TITLE	DATABASE MANAGEMENT SYSTEMS
COURSE CODE	04MB1213
COURSE CREDITS	3

Course Outcomes: After completion of this course, student will be able to:

1. Apply core DBMS concepts to design structured and efficient database systems for business applications.

2. Analyze real-world data requirements and develop conceptual models using Entity-Relationship diagrams and normalization techniques.

3. Evaluate various database models including network, hierarchical, and relational models for their relevance in modern systems.

4. Create, retrieve, and manipulate data using basic and advanced SQL queries in business contexts.

5. Design optimized databases by implementing normalization and integrity constraints to enhance consistency and performance.

Pre-requisite of course: NA

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
3	0	0	50	30	20	0	0

Contents : Unit	Topics	Contact Hours
1	**Introduction to Databases and Transaction:** What is Database system, Purpose of Database System, view of data, Relational Databases, Database Architecture, Transaction Management Data Models: The importance of Data Models, Basic Building Blocks, Business Rules, The evolution of Data Models, Degrees of Data Abstraction. Object Oriented Data Model	9
2	**Database Design, ER-Diagram and Unified Modelling Language:** Database Design and ER Model: Overview, ER-Model, Constraints, ER-Diagrams, ERD Issues, Weak Entity Sets, Codd's rules, Relational Schemas, Introduction to UML	9
3	**Relational Algebra and Calculus:** Relational Algebra: Introduction, Selection and Projection, Set Operations, Renaming, Joins, Division, Syntax, Semantic. Operators, grouping and ungrouping, Relational Comparison. Calculus: Tuple Relational Calculus, Domain Relational Calculus, Calculus vs Algebra, Computational Capabilities.	9

Contents : Unit	Topics	Contact Hours
4	**Constraints, Views and SQL** What is Constraints, types of Constrains, Integrity Constraints Views: Introduction to views, Data independence, security, updates on views, comparison between tables and views SQL: Data definition, Aggregate function, Null Values, Nested sub Queries, Joined relations, and Triggers	9
5	**Relational database model: Logical view of data, keys, and Integrity rules:** : Relational Database design: Features of good Relational Database Design, Atomic Domain and Normalization (1NF, 2NF, 3NF, BCNF)	9
	Total Hours	**45**

Textbook :

1 Database System and Concepts, A Silberschatz, H Korth, and S Sudarshan, McGraw-Hill, 2005

2 Database Systems, Rob, Coronel, Cengage Learning, 2006

References:

1 Database Management Systems, Database Management Systems, Arun K. Majumdar, Pritimoy Bhattacharyya, McGraw Hill Education, 2017

2 An Introduction to Database Systems, An Introduction to Database Systems, C.J. Date, Pearson, 2006

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember / Knowledge	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Higher order Thinking / Creative**
0.00	0.00	30.00	25.00	25.00	20.00