Code: BSE-202	Second semester	**Database Management System**	Credits: 04

Course Objectives:

1. At the completion of this course, students should be able to do the following:
2. Understand the role of a database management system in an organization.
3. Understand basic database concepts, including the structure and operation of the relational data model.
4. Construct simple and moderately advanced database queries using SQL.
5. Understand and successfully apply logical database design principles, including E-R diagrams.
6. Understand the concept of a database transaction and related database facilities.
7. Describe and discuss selected advanced database topics, such as Client Server Parallel & distributed database systems and the data warehouse.

Course Outcome:

The learner will be able:

1. To describe data models and schemas in DBMS
2. To understand the features of database management systems and Relational database.
3. To use SQL- the standard language of relational databases.
4. To understand the design of the database & types of database
5. To understand the concept of Transaction and Query processing.

Unit-1:	**DBMS Concepts**

What is Database?, Database Management System (DBMS), Architecture of DBMS – Three level Structure of DBMS. Entity, Attributes, type of relationships, DBMS users, DBMS Facilities, Advantages and Disadvantages of DBMS, Data Models, Database Languages (DDL, DML, DCL, DQL, TCL)

Unit-2:	**Database Design & the ER Model**

Overview of the Design Process, Design Phases, The Entity-Relationship Model, Entity Sets, Relationship Sets, Attributes, Constraints, Mapping Cardinalities, Keys, Entity Sets, Relationship Sets, Entity Relationship Diagrams, Weak Entity Sets

Unit-3:	**Relational Model**

Structure of Relational Database, Basic Structure, Database Schema, Keys, Query Languages, Fundamentals of Relational Algebra Operations, The Select Operation, The Project Operation, Composition of Relational Operations, The Union Operation, The Cartesian product Operation, Null Values, Modification of the database, Insertion, Updating, Deletion

Unit-4:	**Introducing MySQL**

Installing MySQL on Windows, Understanding MySQL directory Structure for Windows Installation, Managing Databases, Creating Databases, Modifying Databases, Deleting Databases, Managing Tables, Creating Tables, Modifying Tables, Deleting Tables, Inserting Data in MySQL Database, Using INSERT Statement to Add Data, Using REPLACE statement to Add Data, Updating Data in MySQL Database, Deleting Data from a MySQL Database, Retrieving Data from a MySQL Database, The SELECT Statement, The SELECT Statement Options, The optional Clauses of a SELECT statement, WHERE, GROUP BY, HAVING, ORDER BY, LIMIT

Unit-5:	**Operators & Functions in MySQL**

Creating MySQL Expressions, Operator Precedence, Grouping Operators, Using Operators in Expressions, Arithmetic Operators, Comparison Operators, Logical Operators, Sort Operators Comparing & Converting Data, Comparison Functions, Control Flow Functions, Cast Functions, Managing different types of Data, String Functions, Numeric Functions, Date Functions, Summarizing Data, Summary Functions, AVG (), SUM (), MIN (), MAX (), COUNT () Functions, Bit Functions

Unit-6:	**Managing Transactions**

Introducing Transaction, Performing Transaction, Performing a Basic Transaction, START

TRANSACTION Statement, COMMIT Statement, ROLLBACK Statement, Statement the automatically Commit transaction, Adding SAVEPOINT to a Transaction, The SAVEPOINT Statement, ROLLBACK TO SAVEPOINT statement, Setting AUTOCOMMIT Mode and Transaction Isolation Level, Setting the AUTOCOMMIT Mode, Setting the Transaction Isolation Level, Locking Non transactional Tables, The LOCK TABLES Statement, The UNLOCK TABLES Statement		
Reference Books		
1.	An Introduction to Database Systems By Bipin C Desai (Galgotia Pubclication)	
2.	Database System Concepts By Abraham Silberschatz, Henry F Korth, S. Sudarshan (McGRAW Hill Publication)	
3.	Beginning MySQL by Robert Sheldon, Geoff Moes (Wiley Publishing , Inc)	