B.Sc. (I.T.) / M.Sc. (I.T.) 2nd Semester

Course : 204 : Introduction to DBMS

Course Code	204
Course Title	Introduction to DBMS
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Last Review / Revision	June 2023
Purpose of Course	To introduce the basic concepts of database management system that includes data models, database design and basic practical of open-source DBMS.
Course Objective	To teach fundamental concepts of DBMS including data models, ER diagrams, different types of databases. This course also entails practical aspects of open-source database.
Course Out comes	CO1 : Student will be able to learn basic concept of database management system and data models CO2 : Students will be have the knowledge of various data models CO3 : Student will be able work on database management system MySQL and perform practical like creating database , tables and manipulating records
Mapping between COs with PSOs	(see table below)
Pre-requisite	Fundamentals of Computer, Programming Language
Course Outcome	Students will be able to understand and implement basic database design principles, learn overview of different types of databases. Students will also be able to perform practical on database.

Mapping between COs with PSOs

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	▓				
CO2					
CO3					▓

Course Content

Unit : 1 : Basic Concepts of DBMS
- 1.1 File Organization and Traditional File based System
- 1.2 Database and Need for DBMS
- 1.3 Characteristics of DBMS
- 1.4 Applications of DBMS
- 1.5 Views of Data - Schema and instances
- 1.6 Data Independence
- 1.7 Database Languages
- 1.8 Transaction Management
- 1.9 ACID Properties of Transaction
- 1.10 Database Administrator and Database Users
- 1.11 Overall System Architecture

Unit : 2 : Data Models

2.1   Data Models

2.1.1 Network Model

2.1.2 Hierarchical Model

2.1.3 Relational Model

2.1.4 Object Model

2.1.5 Object-Relational Model

2.2   Entity Relationship Model

2.2.1 DB Design using ER Model

2.2.2 Entities

2.2.3 Relationships

2.2.4 Attributes

2.2.5 Entities and Relationship Set

2.2.6 Constraints and Design Issues

2.2.7 Weak Entity Set

2.2.8 Cardinality Ratio

Unit : 3 : Types of Databases and Recent Trends in DBMS

3.1 Types of Databases

3.1.1 Object Oriented Database

3.1.2 Centralized Database

3.1.3 Distributed Database

3.1.4 Parallel Database

3.1.5 Multimedia Database

3.1.6 NoSQL Database

3.1.7 Temporal Database

3.1.8 XML Database

3.2   Recent Trends in DBMS

3.2.1 Overview of Various Databases - MySQL, PostgreSQL, SQLite, MongoDB, MariaDB, Oracle, DB2and SQL Server

3.3 Big Data

Unit: 4 : Introduction to Open Source Database - MySQL

4.1 Getting Started with MySQL

4.2 Installing MySQL

4.3 Data Types

4.4 Creating and Using Database

4.5 DDL Statements

4.5.1 Create Table

4.5.1.1 Constraints

4.5.1.2 Primary Key and Foreign Key Constraint

4.5.2 Alter Table

4.5.3 Delete Table

Unit : 5 : DML Statements and Other Functions of MySQL

5.1   DML Statements

5.1.1 Insert Statement

5.1.2 SQL

5.1.3 Select Statement

5.1.4 Update Statement

5.1.5 Delete Statement

5.2 Aggregate Functions

	5.3 Numerical Functions 5.4 String and Character Functions
Reference Book	1. Database System Concepts : Silberschatz, Korth and Sudarshan - McGraw Hill 2. An introduction to database systems : C. J. Date - Addison Welsley 3. Fundamentals of Database Systems : Elamsri, Navathe, Somayajulu and Gupta - Pearson Education 4. PHP and MySQL Web Development (Developer's Library) : Luke Welling - Addison - Wesley Professional 5. The Compete Reference MySQL : Vikram Vaswani - McGraw Hill 6. Murach's MySQL : Joel Murach - Mike Murach & Associates, Inc.
Teaching Methodology	Lectures, Discussion, Independent Study, Seminars, Case Study and Assignment