

**CS/VSC/T/ 200 (A): Introduction to MySql****Total Credits : 01****Total Contact Hours : 15 Hrs.****Maximum Marks : 50****Learning Objectives of the Course:**

- i) Understand the need for database systems and the basic concepts of DBMS.
- ii) Learn and apply the relational data model and SQL language.
- iii) Gain practical knowledge of MySQL to manage and query databases.
- iv) Identify key elements like constraints, keys, and joins in relational databases.
- v) Apply concepts through simple real-world database design and implementation.

**Course Outcomes ( COs ) :**

After completion of the course, students will be able to

- i) Explain the architecture and types of DBMS.
- ii) Design simple relational databases using appropriate keys and constraints.
- iii) Use SQL commands for database creation, data manipulation, and querying.
- iv) Implement joins and subqueries to retrieve data from multiple tables.
- v) Demonstrate proficiency in using MySQL for database operations.

Module No.	Topics / Actual Contents of the Syllabus	Contact Hours
I	<b>Introduction to DBMS:</b> What is a DBMS?, Advantages over file systems, Types of DBMS (Hierarchical, Network, Relational), DBMS architecture (1-tier, 2-tier, 3-tier) <b>Relational Model &amp; Keys:</b> Tables, attributes, tuples, Concept of Schema, Types of Keys: Primary, Foreign, Candidate, Composite, ER to relational mapping (brief overview)	05 Hrs.
II	<b>SQL Basics with MySQL:</b> Introduction to MySQL, Creating databases and tables, Inserting, updating, and deleting data, SQL Data Types, Simple SELECT queries with WHERE, ORDER BY. <b>Constraints and Aggregate Functions:</b> Constraints: NOT NULL, UNIQUE, DEFAULT, CHECK, PRIMARY KEY, FOREIGN KEY, Functions: COUNT, SUM, AVG, MAX, MIN, Grouping: GROUP BY, HAVING.	05 Hrs.
III	<b>Joins and Subqueries:</b> Joins: INNER, LEFT, RIGHT, Subqueries: Single-row and multi-row, Real-life application example: Student/course database	05 Hrs.

**References:**

1. "Database System Concepts" – Abraham Silberschatz, Henry F. Korth, S. Sudarshan, McGraw Hill
2. "Fundamentals of Database Systems" – Ramez Elmasri, Shamkant B. Navathe, Pearson Education.
3. "MySQL: The Complete Reference" - Vikram Vaswani, McGraw Hill.
4. "SQL, PL/SQL: The Programming Language of Oracle", - Ivan Bayross, BPB Publications.

