**🎯 Objective**

Help students understand relational databases and write efficient SQL queries for data retrieval, manipulation, and analysis.

**🗓️ Training Duration**

* **Total Duration**: 15–20 hours
* **Mode**: Online / In-person / Self-paced
* **Tools Required**: MySQL / PostgreSQL / SQLite / SQL Server, DB Browser, or pgAdmin

**📚 Module Breakdown**

**🧩 Module 1: Introduction to SQL & Databases**

* What is a database?
* RDBMS vs NoSQL
* SQL vs other querying tools
* Introduction to tables, records, columns, rows
* Installing SQL database (MySQL/PostgreSQL/SQLite)

**🗄️ Module 2: Data Definition Language (DDL)**

* CREATE, ALTER, DROP, TRUNCATE statements
* Data types (INT, VARCHAR, DATE, etc.)
* Constraints: PRIMARY KEY, FOREIGN KEY, UNIQUE, NOT NULL, DEFAULT, CHECK
* Creating and modifying tables

**📥 Module 3: Data Manipulation Language (DML)**

* INSERT, UPDATE, DELETE
* Inserting single and multiple rows
* Safe update mode
* Importance of WHERE clause

**🔎 Module 4: Data Query Language (DQL)**

* SELECT basics
* Filtering data using WHERE
* Logical operators: AND, OR, NOT, IN, BETWEEN, LIKE
* Sorting: ORDER BY
* Limiting rows: LIMIT / TOP

**🧠 Module 5: SQL Functions & Expressions**

* Aggregate functions: COUNT, SUM, AVG, MIN, MAX
* String functions: CONCAT, SUBSTRING, UPPER, LOWER, LENGTH
* Date functions: NOW(), DATE(), DATEDIFF, YEAR(), MONTH()
* Math functions

**🧮 Module 6: GROUP BY and HAVING**

* Grouping results
* Using GROUP BY with aggregate functions
* Filtering groups using HAVING
* Difference between WHERE and HAVING

**🔗 Module 7: Joins and Relationships**

* What are table relationships?
* INNER JOIN
* LEFT JOIN, RIGHT JOIN
* FULL OUTER JOIN
* SELF JOIN
* Using joins across multiple tables

**📦 Module 8: Subqueries and Derived Tables**

* Subqueries in SELECT, FROM, and WHERE
* Correlated vs non-correlated subqueries
* Using subqueries with IN, ANY, ALL

**📄 Module 9: Views, Indexes & Stored Procedures (Optional)**

* Creating and using VIEWS
* Advantages and limitations
* Introduction to indexes and performance
* Basics of stored procedures (platform-specific)

**🔐 Module 10: Transactions and Data Integrity**

* BEGIN, COMMIT, ROLLBACK
* ACID properties
* Error handling in transactions
* SAVEPOINT