

Syllabus

This course, will guide you through foundational concepts like setting up and modeling relational databases. You'll also work with SQL for data retrieval, explore advanced techniques. You'll learn how to retrieve and manipulate data using SELECT, INSERT, UPDATE, and DELETE statements. We'll also cover the use of JOIN clauses to combine data from multiple tables and explore SQL functions and aggregate functions. Then we'll move on to advanced data handling techniques, concentrating on advanced SQL queries and performance tuning strategies. You'll understand how to manage transactions, concurrency control in SQL, and stored procedures and functions. We'll also cover best practices for securing SQL databases. *Skill you will gain:* Why we need Database Management?, set up SQL Server, syntax and functionalities of SQL, Aggregate Functions, Retrieve and Manipulate data, How to combine data

1. **Introduction DB :** Introduction using of ORM, structure of Relational Database(RDB) [Table,Row,Col,PK,FK,Schema], principles of RDB design [avoid redundancy,data integrity,normalization,relationships include one-to-one,one-to-many, column names descriptive], fundamentals of RDB [ACID properties (Atomicity, Consistency, Isolation, Durability), Constraints], choosing a DBMS, Setting up Relational DB.
2. **Basics of SQL:** Understanding SQL syntax, describe the functionalities of SQL commands, data retrieval with SELECT statement, writing SELECT statement, sorting and filtering data, DML and DDL explaining, SQL JOINS, combining data with JOIN clauses, SQL functions, using Aggregate function in SQL, working and implementing SQL function and Aggregate functions.
3. **Data Handling:** Subqueries, Common Table Expression (CTE), Filtering and Query Techniques, Optimize SQL queries, Transaction, Concurrency in SQL, Stored Procedure, Functions, SQL Injection
4. **Copilot for SQL:** Writing SQL queries with MS Copilot, SQL query Debugging MS copilot.
5. **Connect DB with Backend:** Data modeling EF Core, Simple DB with EF Core, Writing and Implementing CRUD operation with EF Core.