# Intermediate Querying SQL Databases using T-SQL Training

Duration: **2 Day**

BILGINC IT Academy
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Take your SQL querying expertise to the next level with this**hands-on, expert-led {*training} course**. Designed for professionals who already understand basic T-SQL concepts, this program explores advanced querying techniques, optimization strategies, and real-world scenarios used in Microsoft SQL Server environments (from SQL Server 2005 through 2016).

*Please note:* This is **not a beginner course**.

## Prerequisites

## Who Should Attend

This course is ideal for:

- IT Professionals working with Microsoft SQL Server (2005–2016).
- Technical users writing queries for reporting or data analysis.
- Non-technical “power users” familiar with SQL Server Management Studio who wish to enhance their analytical skills.

*Delegates joining via Extended Virtual Classroom will require a dual-monitor setup.*

## What You Will Learn

By the end of this {*training}, you will have gained knowledge and skills in the following areas:

- Use **table expressions** (views, CTEs, and table-valued functions) effectively.
- Compare datasets using **set operators** such as UNION, INTERSECT, and EXCEPT.
- Implement **window functions** for ranking, aggregation, and offset analysis.
- Apply **PIVOT, UNPIVOT, and GROUPING SETS** for multidimensional reporting.
- Write advanced **T-SQL programs** with variables, conditionals, and loops.
- Manage **errors and transactions** using TRY/CATCH and transaction control statements.

## Training Outline

**Module 1: Using Table Expressions**

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**Module 1: Using Table Expressions**

- Creating and using **Derived Tables**
- Implementing **Common Table Expressions (CTEs)**
- Defining and managing **Views**
- Building **Inline Table-Valued Functions**

**Module 2: Using Set Operators**

- Combining datasets with **UNION**
- Comparing data with **EXCEPT** and **INTERSECT**
- Applying the **APPLY** operator for advanced joins

**Module 3: Using Window Ranking, Offset, and Aggregate Functions**

- Understanding the **OVER** clause
- Applying window functions: **ROW_NUMBER, RANK, DENSE_RANK, NTILE**
- Utilizing **LAG, LEAD, FIRST_VALUE, LAST_VALUE**

**Module 4: Pivoting and Grouping Sets**

- Transforming data with **PIVOT** and **UNPIVOT**
- Building multi-level summaries with **GROUPING SETS, ROLLUP, and CUBE**

**Module 5: Programming with T-SQL**

- Working with **batches, variables, and control flow**
- Implementing **dynamic SQL** and **synonyms**
- Understanding loops and conditional logic

**Module 6: Implementing Error Handling**

- Differentiating compile-time and run-time errors
- Managing errors with **TRY/CATCH**
- Using **ERROR functions** and the **THROW** statement

**Module 7: Implementing Transactions**

- Understanding **ACID principles**
- Controlling transactions with **BEGIN, COMMIT, ROLLBACK**

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- Configuring **isolation levels** for concurrent environments