

# 20762: Developing SQL Databases

**Duration: 5 Days**

**Method: Instructor-Led Training (ILT) | Live Online Training**

## Course Description

This course provides participants with the knowledge and skills to develop a Microsoft® SQL Server® database. The course focuses on teaching participants how to use SQL Server product features and tools related to developing a database.

## Target Audience

This course is intended for:

- IT Professionals who want to become skilled on SQL Server product features and technologies for implementing a database.
- Individuals who are developers from other product platforms looking to become skilled in the implementation of a SQL Server database.

## Prerequisites

To attend this course, candidates must have:

- Basic knowledge of the Microsoft Windows® operating system and its core functionality.
- Working knowledge of Transact-SQL.
- Working knowledge of relational databases.

## Course Objectives

Upon successful completion of this course, attendees will be able to:

- Design and Implement Tables.
- Describe advanced table designs
- Ensure Data Integrity through Constraints.
- Describe indexes, including Optimized and Column store indexes
- Design and Implement Views.
- Design and Implement Stored Procedures.
- Design and Implement User Defined Functions.
- Respond to data manipulation using triggers.
- Design and Implement In-Memory Tables.
- Implement Managed Code in SQL Server.
- Store and Query XML Data.
- Work with Spatial Data.
- Store and Query Blobs and Text Documents.



## Course Topics

### Module 1: Introduction to Database Development

- Introduction to the SQL Server Platform
- SQL Server Database Development Tasks

### Module 2: Designing and Implementing Tables

- Designing Tables
- Data Types
- Working with Schemas
- Creating and Altering Tables

### Module 3: Advanced Table Designs

- Partitioning Data
- Compressing Data
- Temporal Tables

### Module 4: Ensuring Data Integrity through Constraints

- Enforcing Data Integrity
- Implementing Data Domain Integrity
- Implementing Entity and Referential Integrity

### Module 5: Introduction to Indexes

- Core Indexing Concepts
- Data Types and Indexes
- Heaps, Clustered, and Non-Clustered Indexes
- Single Column and Composite Indexes

### Module 6: Designing Optimized Index Strategies

- Index Strategies
- Managing Indexes
- Execution Plans
- The Database Engine Tuning Advisor
- Query Store

### Module 7: Column store Indexes

- Introduction to Column Store Indexes
- Creating Column Store Indexes
- Working with Column Store Indexes

### Module 8: Designing and Implementing Views

- Introduction to Views
- Creating and Managing Views
- Performance Considerations for Views

### Module 9: Designing and Implementing Stored Procedures

- Introduction to Stored Procedures
- Working with Stored Procedures
- Implementing Parameterized Stored Procedures
- Controlling Execution Context

### Module 10: Designing and Implementing User-Defined Functions

- Overview of Functions
- Designing and Implementing Scalar Functions
- Designing and Implementing Table-Valued Functions
- Considerations for Implementing Functions
- Alternatives to Functions

### Module 11: Responding to Data Manipulation via Triggers

- Designing DML Triggers
- Implementing DML Triggers
- Advanced Trigger Concepts



## Course Topics *Continued*

### Module 12: Using In-Memory Tables

- Memory-Optimized Tables
- Natively Compiled Stored Procedures

### Module 13: Implementing Managed Code in SQL Server

- Introduction to CLR Integration in SQL Server
- Implementing and Publishing CLR Assemblies

### Module 14: Storing and Querying XML Data in SQL Server

- Introduction to XML and XML Schemas
- Storing XML Data and Schemas in SQL Server
- Implementing the XML Data Type
- Using the Transact-SQL FOR XML Statement
- Getting Started with XQuery
- Shredding XML

### Module 15: Storing and Querying Spatial Data in SQL Server

- Introduction to Spatial Data
- Working with SQL Server Spatial Data Types
- Using Spatial Data in Applications

### Module 16: Storing and Querying BLOBs and Text Documents in SQL Server

- Considerations for BLOB Data
- Working with FILESTREAM
- Using Full-Text Search

### Module 17: SQL Server Concurrency

- Concurrency and Transactions
- Locking Internals

### Module 18: Performance and Monitoring

- Extended Events
- Working with extended Events
- Live Query Statistics
- Optimize Database File Configuration
- Metrics

## LABS INCLUDED

