

SQL SERVER 2025: The Two-Day Masterclass

Summary: Duration –2 full days (Hands-On Training with Demos & Labs), Level - 300 (MS Scale), Delivery method - fully interactive, instructor-led course

SQL Server 2025 introduces some of the most significant advances in the platform's history — from AI integration and vector search to enhanced performance, real-time streaming, and modern T-SQL. This two-day, hands-on masterclass is built for professionals who want more than slides: every module pairs concept explanations with live demos and guided lab exercises so you leave with working knowledge, not just awareness.

Across two intensive days, you will explore, experiment, and build — gaining the practical skills to make SQL Server 2025 work in your environment from day one.

Whether you're building AI-powered apps, optimizing for performance, or designing the next generation of your data platform — this course gives you the hands-on foundation to make SQL Server 2025 work for you.

AUDIENCE:

This course is designed for experienced SQL Server professionals ready to get hands-on with the latest release. You do not need prior SQL Server 2025 exposure — but you should be comfortable with SQL fundamentals and day-to-day database work.

Recommended background: 2+ years working with SQL Server (any version). Familiarity with T-SQL, basic query tuning, or application development against a relational database.

To get the most from the labs and demos, attendees should come prepared with the following:

- ✓ **Technical Prerequisites**
 - Comfortable writing and reading T-SQL queries (SELECT, JOINS, aggregations, subqueries)
 - Basic understanding of SQL Server objects: tables, indexes, stored procedures, views
 - Familiarity with SQL Server Management Studio (SSMS) or Azure Data Studio
 - Working knowledge of your primary role: developer, DBA, or data engineer
- ✓ **Nice to Have (not required)**
 - Experience with any version of SQL Server 2019 or 2022
 - Basic familiarity with Azure services or Microsoft Fabric
 - Exposure to JSON, REST APIs, or vector/embedding concepts

WHAT YOU'LL TAKE AWAY:

- Hands-on experience running and testing new SQL Server 2025 features in a live lab environment
- Working knowledge of AI and vector search capabilities you can apply to your own data platform
- Practical T-SQL patterns using new 2025 syntax — ready to use in production code
- A clear upgrade and migration checklist tailored to your role and workload type
- Reusable lab scripts, demo queries, and reference guides to take back to your team
- Scenarios, decision frameworks, and guidelines to evaluate features for your specific context

TOPICS:

DAY 1 — DEEP DIVES

Module 1: Engine, Performance & Security

This module covers the core engine, performance, security, availability, and hybrid management advances in SQL Server 2025. The most DBA-centric session of the course, every topic is backed by a live demo and a hands-on lab.

- **Performance & Engine**
 - Optimized locking: architecture and what changes for OLTP workloads
 - Accelerated Database Recovery (ADR): what is new in 2025
 - Intelligent Query Processing (IQP) optimizations in 2025
- **Security**
 - Microsoft Entra ID integration for on-prem SQL Server
 - Encryption improvements in SQL Server 2025
- **Availability**
 - Distributed Availability Groups: new features in 2025
 - Optimized AG failover: reduced RTO and improved health detection
- **Azure Arc**
 - Azure Arc-enabled SQL Server: management, monitoring, and policy from Azure
 - Enabling Arc for existing on-prem SQL Server instances
- **Labs**
 - Lab 1A: Optimized locking and ADR in action under an OLTP workload
 - Lab 1B: Entra ID login configuration for on-prem SQL Server

- Lab 1C: Azure Arc registration and management walkthrough
- **Scenarios & Guidelines**
 - When to enable optimized locking in existing production workloads
 - Entra ID vs. SQL logins: migration and coexistence strategy
 - Distributed AGs vs. traditional AGs: choosing the right topology
 - Azure Arc readiness: prerequisites and what you gain after registration

Module 2: T-SQL & Developer Features

SQL Server 2025 brings a significant set of T-SQL additions for developers. This module focuses on the new functions and capabilities you will use every day — all demonstrated with practical, runnable examples.

- **Topics Covered**
 - JSON improvements: JSON_TABLE(), new path syntax, and aggregation support
 - Regex support: pattern matching and string manipulation in native T-SQL
 - REST/HTTP integration directly from T-SQL
 - New T-SQL functions introduced in SQL Server 2025
- **Labs**
 - Lab 2A: JSON_TABLE() and new T-SQL functions hands-on
 - Lab 2B: New T-SQL Functions in 2025
- **Scenarios & Guidelines**
 - When to move JSON parsing into the database vs. keeping it in application code
 - Regex vs. LIKE: choosing the right pattern-matching approach
 - REST from T-SQL: use cases, security considerations, and limits

Module 3: AI, Vector Search & Semantic Capabilities

This is the module that changes how you think about the database. SQL Server 2025 brings intelligence inside your data platform — vector storage, embedding generation, and semantic search without moving data to an external service. We'll walk through the architecture, the APIs, and the real-world patterns.

- **Topics Covered**
 - Vector data type and vector indexing in SQL Server 2025
 - Storing and querying embeddings natively
 - Semantic search: combining full-text and vector proximity queries
 - AI-driven application architecture: keeping data gravity inside SQL Server
- **Labs**
 - Lab 3A: Vector table creation, embedding storage, and cosine similarity queries

- Lab 3B: Hybrid semantic + keyword search
- **Scenarios & Guidelines**
 - When to use SQL Server vector search vs. a dedicated vector database
 - Embedding strategy: choosing model size, dimensionality, and update frequency
 - Security and compliance considerations for storing AI-generated embeddings in your existing SQL estate

DAY 2 — STREAMING, ARCHITECTURE & ROADMAP

Module 4: Data Engineering, Streaming & Architecture

This module covers how SQL Server 2025 fits into modern data architectures — from real-time change event streaming and Microsoft Fabric integration through to hybrid and cloud-first deployment patterns.

- **Data Engineering & Streaming**
 - Change event streaming in SQL Server 2025: architecture and configuration
 - Real-time analytics integration with Microsoft Fabric
 - Microsoft Fabric mirroring and shortcuts for SQL Server data
- **Architecture & Hybrid Cloud**
 - SQL Server 2025 in modern hybrid data architectures
 - SQL Server in the broader Microsoft data ecosystem
- **Labs**
 - Lab 4A: Change event streaming to Microsoft Fabric
 - Lab 4B: Querying Fabric-mirrored SQL Server data
- **Scenarios & Guidelines**
 - 4 paths of data integration between SQL Server 2025 and MS Fabric – implementation strategies and steps
 - Fabric integration: when mirroring vs. shortcuts fits your architecture
 - Positioning SQL Server 2025 in on-prem, hybrid, and cloud-first designs

Module 5: Migration, Best Practices & Roadmap

The course wraps with a practical, role-specific guide to getting from where you are to where you want to be with SQL Server 2025 — covering upgrade paths, compatibility levels, known migration friction points, and how to build a strategic roadmap your team can execute.

- **Topics Covered**
 - Compatibility levels and the safe upgrade ladder from 2016 through 2022 to 2025

- Database Experimentation Assistant (DEA) and Query Store replay for pre-migration testing
- Breaking changes, deprecated features, and code modernization checklist
- Post-migration monitoring strategy: catching regressions before users do
- Building a SQL Server 2025 adoption roadmap for your organization
- **Labs**
 - Lab 5A: Migration assessment and remediation prioritization on a legacy database
 - Lab 5B: Query plan stability testing under SQL Server 2025 compatibility level
- **Scenarios & Guidelines**
 - The two-phase compatibility level strategy: how to upgrade without regressing
 - DBA upgrade checklist: 20 things to validate before going live on SQL Server 2025
 - Developer modernization guide: T-SQL patterns to retire and patterns to adopt
 - Prioritization framework: which 2025 features to activate first for maximum ROI