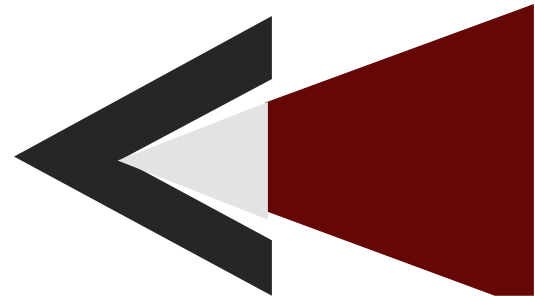




**MICROSOFT  
SQL SERVER 2016  
DATABASE  
DEVELOPMENT  
CERTIFICATION  
TRAINING**



# COURSE CURRICULUM

## Module 1 - Database Objects

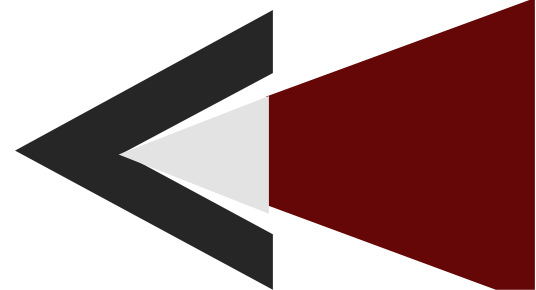
- Creating Tables
- Dropping Tables
- Altering Tables
- Adding and Removing Columns
- Duplicating Tables
- Renaming Tables
- Constraints
- Naming Conventions
- Data Types
- Designing for Normalization
- Database Denormalization
- Practice: Implementing SQL Tables

## Module 2: Indexes and Views

- Index Design Basics
- Tables Without Clustered Indexes
- Clustered vs. Nonclustered Indexes
- Creating Clustered Indexes
- Creating Nonclustered Indexes
- Creating Unique Indexes
- Creating Filtered Indexes
- Creating Indexes with Included Columns
- Deleting Indexes
- Modifying Indexes
- Designing and Implementing Views
- Designing a View Structure
- Types of Views
- Creating Views
- Creating Indexed Views
- Modifying Views
- Modifying Data Using a View
- Using Partitioned Views
- Renaming and Deleting a View
- Practice: Creating Indexes

## Module 3: Columnstore Index

- Overview
- When to Implement a Columnstore Index
- Creating a Clustered Columnstore Index



- Columnstore Indexes Data Loading
- Columnstore Versioned Feature Summary
- Columnstore Indexes Query Performance
- Columnstore for Real-time Operational Analytics
- Columnstore Indexes for Data Warehousing
- Columnstore Indexes Defragmentation
- Nonclustered indexes
- In-memory Indexes
- XML Indexes
- Practice: Implementing Columnstore Indexes

#### **Module 4: Programmability Objects**

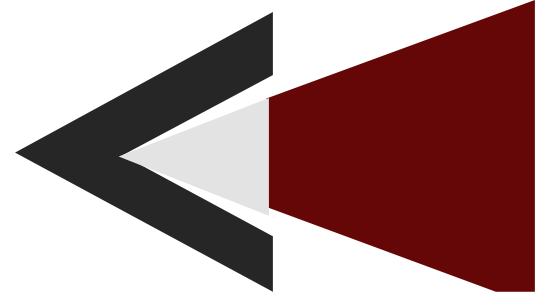
- Data Integrity
- Constraints
- Stored Procedures
- Practice: Implementing Constraints

#### **Module 5: Triggers and Functions**

- Creating DML Triggers
- Creating CLR Triggers
- DML Trigger Security
- Implementing DDL Triggers
- Gathering DDL Trigger Information
- DDL Events and Event Groups
- Implementing Triggers
- Specifying First and Last Trigger
- Managing Transactions in Logon Triggers
- Disabling Logon Triggers
- AFTER Trigger
- INSTEAD Trigger
- User-defined Functions Components
- Scalar-valued Functions
- Table-valued Functions
- Built-in Functions
- Deterministic Functions
- Nondeterministic Functions
- Practice: Configuring Triggers

#### **Module 6: Transactions and Isolation Levels**

- Transaction Statements
- Isolation Levels
- Practice: Administering Transactions



## **Module 7: Managing Database Concurrency**

- Locking Basics
- Concurrency Effects
- Understanding Deadlocks
- Minimizing Deadlocks
- Handling Deadlocks
- Remediating Deadlocks
- Troubleshooting Locking Issues
- Lock Escalation Behavior
- Memory-optimized Tables
- Native Stored Procedures
- Practice: Troubleshooting Deadlocks

## **Module 8: Optimize SQL Database Objects and Infrastructure**

- Optimizing Statistics
- Optimizing Indexes
- Analyzing Query Plans
- Troubleshooting Query Plans
- Practice: Statistics and Indexes

## **Module 9: Database Instances**

- Database Instance Performance
- Azure SQL Database
- Monitoring Database Instances
- Practice: SQL Server Monitoring

## **Module 10: SQL Server Performance**

- Performance Metrics
- Performance Baseline
- Performance Monitor
- Dynamic Management Objects
- Troubleshooting Performance Issues
- Azure SQL Database Performance
- Monitoring Tools
- Extended Events
- SQL Trace
- Practice: Monitoring Performance

