**This class combines two courses into one 5-day class.**
**2779 (3-day) & 2780 (2-day)**

# Implementing a Microsoft SQL Server 2005 Database

*Course 2779: Three days; Instructor-Led*

## *Introduction*

This three-day instructor-led course provides students with product knowledge and skills needed to implement a Microsoft SQL Server 2005 database. The course focuses on teaching individuals how to use SQL Server 2005 product features and tools related to implementing a database.

## *Audience*

This course is intended for IT Professionals wanting to become skilled on SQL Server 2005 product features and technologies for implementing a database.

## *At Course Completion*

After completing this course, students will be able to:

- Create databases and database files.
- Create data types and tables.
- Use XML-related features in Microsoft SQL Server 2005.
- Plan, create, and optimize indexes.
- Implement data integrity in Microsoft SQL Server 2005 databases by using constraints, triggers, and XML schemas.
- Implement views.
- Implement stored procedures and functions.
- Implement managed code in the database.
- Use Service Broker to build a messaging-based solution.

## *Prerequisites*

Before attending this course, students must have:

- Basic knowledge of the Microsoft Windows operating system and its core functionality.
- Working knowledge of Transact-SQL.
- Working knowledge of relational databases.
- Some experience with database design.

In addition, it is recommended, but not required, that students have completed:

- Course 2778, Writing Queries Using Microsoft SQL Server 2005 Transact-SQL.

## *Course Outline*

**Module 1: Creating Databases and Database Files**

This module explains how to create databases, filegroups, schemas, and database snapshots.

Lessons

- Creating Databases.
- Creating Filegroups.
- Creating Schemas.
- Creating Database Snapshots.

Lab 1: Creating a Database

- Creating a Database.
- Creating Schemas.

After completing this module, students will be able to:

- Create databases.
- Create filegroups.
- Create schemas.
- Create database snapshots.

**Module 2: Creating Data Types and Tables**

This module explains how to create data types and tables. It also describes how to create partitioned tables.

**Lessons**

- Creating Data Types.
- Creating Tables.
- Creating Partitioned Tables.

**Lab 2: Creating Data Types and Tables**

- Creating Data Types.
- Creating Tables.
- Creating Partitioned Tables.

After completing this module, students will be able to:

- Create data types.
- Create tables.
- Create partitioned tables.

**Module 3: Using XML**

This module explains how to use the FOR XML clause and the OPENXML function. It also describes how to use the xml data type and its methods.

**Lessons**

- Retrieving XML by Using FOR XML.
- Shredding XML by Using OPENXML.
- Using the xml Data Type.

**Lab 3: Working with XML**

- Mapping Relational Data and XML.
- Storing XML Natively in the Database.

After completing this module, students will be able to:

- Retrieve XML with FOR XML.
- Shred XML with OPENXML.
- Use the xml data type.
- Use the methods of the xml data type.

**Module 4: Creating and Tuning Indexes**

This module explains how to plan, create, and optimize indexes. It also describes how to create XML indexes.

**Lessons**

- Planning Indexes.
- Creating Indexes.
- Optimizing Indexes.
- Creating XML Indexes.

**Lab 4: Creating Indexes**

- Creating Indexes.
- Tuning Indexes.
- Creating XML Indexes.

After completing this module, students will be able to:

- Plan indexes.
- Create indexes.
- Optimize indexes.
- Create XML indexes.

**Module 5: Implementing Data Integrity**

This module explains how to implement constraints, triggers, and XML schemas.

**Lessons**

- Data Integrity Overview.
- Implementing Constraints.
- Implementing Triggers.
- Implementing XML Schemas.

**Lab 5: Implementing Data Integrity**

- Creating Constraints.
- Creating Triggers.
- Implementing XML Schemas.

After completing this module, students will be able to:

- Describe types of data integrity and options for enforcing it.
- Implement constraints.
- Implement triggers.
- Implement XML schemas.

**Module 6: Implementing Views**

This module explains how to create views.

**Lessons**

- Introduction to Views.
- Creating and Managing Views.
- Optimizing Performance by Using Views.

**Lab 6: Creating Views**

- Creating Views.
- Creating Indexed Views.
- Creating Partitioned Views.

After completing this module, students will be able to:

- Describe the purpose of views.
- Create and manage views.
- Design views for performance.

**Module 7: Implementing Stored Procedures and Functions**

This module explains how to create stored procedures and functions.

**Lessons**

- Implementing Stored Procedures.
- Creating Parameterized Stored Procedures.
- Creating Functions.
- Handling Errors.
- Controlling Execution Context.

**Lab 7: Creating Stored Procedures and Functions**

- Creating Stored Procedures.
- Creating Functions.

After completing this module, students will be able to:

- Implement stored procedures.
- Create parameterized stored procedures.
- Handle errors in a stored procedure.
- Implement Scalar Functions.
- Create Table Valued Functions.
- Control Execution Context.

**Module 8: Implementing Managed Code in the Database**

This module explains how to implement managed database objects.

**Lessons**

- Introduction to the SQL Server Common Language Runtime.
- Importing and Configuring Assemblies.
- Creating Managed Database Objects.

**Lab 8: Implementing Managed Code in the Database**

- Importing an Assembly.
- Creating Managed Database Objects.

After completing this module, students will be able to:

- Identify appropriate scenarios for managed code in the database.
- Import and configure assemblies.
- Create managed database objects.

**Module 9: Using Service Broker**

This module explains how to build a messaging-based solution with Service Broker.

**Lessons**

- Service Broker Overview.
- Creating Service Broker Objects.
- Sending and Receiving Messages.

**Lab 9: Using Service Broker**

- Creating Service Broker Objects.
- Implementing the Initiating Service.
- Implementing the Target Service.

After completing this module, students will be able to:

- Describe Service Broker functionality and architecture.
- Create Service Broker objects.
- Send and receive Service Broker messages.

# Maintaining a Microsoft SQL Server 2005 Database

*Course 2780: Two days; Instructor-Led*

## *Introduction*

This three-day instructor-led course provides students with product knowledge and skills needed to maintain a Microsoft SQL ServerT 2005 database. The course focuses on teaching individuals how to use SQL Server 2005 product features and tools related to maintaining a database.

## *Audience*

This course is intended for IT Professionals wanting to become skilled on SQL Server 2005 product features and technologies for maintaining a database.

## *At Course Completion*

After completing this course, students will be able to:

- Install and configure SQL Server 2005.
- Manage database files.
- Manage security.
- Perform administrative tasks.
- Back up databases.
- Restore databases.
- Monitor SQL Server.
- Troubleshoot SQL Server.
- Transfer data.
- Maintain high availability.

## *Prerequisites*

Before attending this course, students must have:

- Basic knowledge of the Microsoft Windows operating system and its core functionality.
- Working knowledge of Transact-SQL.
- Working knowledge of relational databases.
- Some experience with database design.

In addition, it is recommended, but not required, that students have completed:

- Course 2778: Writing Queries Using Microsoft SQL Server 2005 Transact-SQL.
- Course 2779: Implementing a Microsoft SQL Server 2005 Database.

## *Course Outline*

**Module 1: Installing and Configuring SQL Server 2005**

This module explains how to plan for and install SQL Server 2005, how to manage a SQL Server 2005 installation, and how to use the SQL Server 2005 administrative tools.

**Lessons**

- Preparing to install SQL Server.
- Installing SQL Server.
- Managing a SQL Server 2005 Installation.

**Lab 1: Installing SQL Server 2005**

- Performing an Installation.
- Managing SQL Server.

After completing this module, students will be able to:

- Prepare to install SQL Server.
- Install SQL Server.
- Manage a SQL Server installation.

**Module 2: Managing Databases and Files**

This module explains how to manage databases and files.

**Lessons**

- Planning databases.
- Creating databases.
- Managing databases.

**Lab 2: Creating and Managing Databases**

- Creating a Database.
- Managing Filegroups.
- Viewing Metadata.

After completing this module, students will be able to:

- Plan databases.
- Create databases.
- Manage databases.

**Module 3: Disaster Recovery**

This module explains how to plan and implement a backup and restore strategy.

**Lessons**

- Planning a Backup Strategy.
- Backing Up User Databases.
- Restoring User Databases.
- Recovering Data from Database Snapshots.
- System Database and Disaster Recovery.

**Lab 4: Implementing a Disaster Recovery Strategy**

- Implementing a Backup Strategy.
- Restoring Databases.
- Rebuild The Master Database.

After completing this module, students will be able to:

- Plan a backup strategy.
- Back up user databases.
- Restore user databases.
- Recover data from database snapshots.
- Back up and restore system databases.

**Module 4: Managing Security**

This module explains how to manage principals, securables, and permissions, and how to implement cryptography in a SQL Server database.

**Lessons**

- Overview of SQL Server Security.
- Securing the Server Scope.
- Securing the Database Scope.
- Managing Keys and Certificates in SQL Server.

**Lab 3: Securing SQL Server**

- Creating Logins.
- Creating and Managing Users.
- Using a Certificate to Encrypt Data.

After completing this module, students will be able to:

- Describe the SQL Server security architecture.
- Implement security at the server scope.
- Implement security at the database and schema scopes.
- Use cryptographic functionality in SQL Server.

**Module 5: Monitoring SQL Server**

This module explains how to monitor SQL Server performance and activity.

**Lessons**

- Viewing Current Activity.
- Using System Monitor.
- Using SQL Server Profiler.
- Using DDL Triggers.
- Using Event Notifications.

**Lab 5: Monitoring SQL Server**

- Monitoring SQL Server Performance.
- Tracing SQL Server Activity.
- Implementing DDL Trigger.

After completing this module, students will be able to:

- View current activity in SQL Server.
- Monitor SQL Server performance with System Monitor.
- Monitor SQL Server events with SQL Server Profiler.
- Implement DDL Triggers.
- Implement Event Notifications.

**Module 6: Transferring Data**

This module explains how to transfer and transform data.

**Lessons**

- Overview of Data Transfer.
- Introduction to SQL Server Integration Services.
- Using SQL Server Integration Services.

**Lab 6: Transferring Data with SQL Server Integration Services (SSIS)**

- Create an SSIS Package.
- Deploying an SSIS Package.

After completing this module, students will be able to:

- Describe the tools and technologies for transferring data.
- Describe the main features of SSIS.
- Transfer and transform data with SSIS.

**Module 7: Automating Administrative Tasks**

This module explains how to use the SQL Server Agent to automate administrative tasks.

**Lessons**

- Automating Administrative Tasks in SQL Server 2005.
- Configuring the SQL Server Agent.
- Creating Jobs and Operators.
- Creating Alerts.
- Managing Multiple Servers.
- Managing SQL Server Agent Security.

**Lab 7: Automating Database Administration**

- Configuring the SQL Server Agent.
- Creating Operators and Jobs.
- Creating Alerts.

After completing this module, students will be able to:

- Describe automation options in SQL Server.
- Configure the SQL Server Agent.
- Create jobs and operators.
- Create alerts.
- Manage multiple servers.
- Manage SQL Server Agent security.

**Module 8: Maintaining High Availability**

This module explains how to implement high availability technologies with SQL Server 2005.

**Lessons**

- Introduction to High Availability.
- Implementing Server Clustering.
- Implementing Database Mirroring.
- Implementing Log Shipping.

**Lab 8: Configuring Database Mirroring**

- Setting the Recovery Model.
- Backing Up and Restoring the Database.
- Starting Database Mirroring.
- Performing an Automatic and Manual Failover.

After completing this module, students will be able to:

- Describe high availability options for SQL Server.
- Implement Server Clustering.
- Implement Database Mirroring.
- Implement Log Shipping.

**Module 9: Introduction to Replication**

This module explains considerations for implementing replication.

**Lessons**

- Overview of Replication.
- Replication Scenarios.

**Lab 9: Implementing Replication**

- Creating a Publication.
- Creating a Subscription.

After completing this module, students will be able to:

- Describe replication and its components.
- Describe common replication scenarios.