

ITMT 1072

Course Syllabus

1. Name of Course: Maintaining a Microsoft SQL Server 2005 Database

2. Number of Clock Hours: 40

3. Course Description:

This course provides students with the knowledge and skills to maintain a Microsoft SQL Server 2005 database. The course focuses on teaching individuals how to use SQL Server 2005 product features and tools related to maintaining a database.

Prerequisites: ITMT 1071 Implementing a Microsoft SQL Server 2005 Database.

4. Course Objectives

After completing this course, students will be able to:

- Install and configure SQL Server 2005.
- Manage database files.
- Backup and restore databases.
- Manage security.
- Monitor SQL Server.
- Transfer data into and out of SQL Server.
- Automate administrative tasks.
- Replicate data between SQL Server instances.
- Maintain high availability.

5. Rationale:

Upon completion of this course, students will have a better understanding of Microsoft SQL Server 2005, a power database system.

6. Required Materials:

Microsoft Official Curriculum, MOC 2780, included.

7. Evaluation

Those who participate in class discussions, complete course lab work, and miss no more than three class meetings will be awarded 4.0 continuing education units.

8. 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 2005

- Managing a SQL Server 2005 Installation

Lab : Installing and Configuring SQL Server 2005

- Performing an Installation
- Managing SQL Server

After completing this module, students will be able to:

- Explain how to prepare the hardware and other resources necessary to install SQL Server 2005.
- Install SQL Server 2005.
- Manage and configure a SQL Server 2005 installation.

Module 2: Managing Databases and Files

This module explains how to manage databases and files.

Lessons

- Planning Databases
- Creating Databases
- Managing Databases

Lab : Managing Databases and Files

- Creating a Database
- Monitoring and Managing Filegroup Usage
- Viewing Database Metadata

After completing this module, students will be able to:

- Plan how to implement a database that meets an organization's requirements.
- Create a SQL Server database.
- Manage a SQL Server database.

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
- Performing Online Restore Operations
- Recovering Data from Database Snapshots

- System Database and Disaster Recovery

Lab : Disaster Recovery

- Implementing a Backup Strategy
- Restoring and Recovering a Database
- Performing Piecemeal Backup and Restore Operations
- Restoring the master Database

After completing this module, students will be able to:

- Plan a backup strategy for a database.
- Back up user databases.
- Restore user databases from backups.
- Restore data in a user database while it is online.
- Recover data for a user database from a database snapshot.
- Restore and recover systems 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
- Protecting the Server Scope
- Protecting the Database Scope
- Managing Keys and Certificates in SQL Server

Lab : Managing Security

- Creating Logins and Assigning Server-Scope Permissions
- Creating and Managing Users
- Using a Certificate to Protect Data

After completing this module, students will be able to:

- Describe how SQL Server manages security.
- Protect SQL Server at the server level.
- Protect SQL Server databases.
- Use keys and certificates to protect SQL Server objects.

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 : Monitoring SQL Server

- Monitoring SQL Server Performance
- Tracing SQL Server Activity
- Implementing DDL Triggers

After completing this module, students will be able to:

- Examine the current activity in a SQL Server instance.
- Use System Monitor to obtain performance data about your computer and the instances of SQL Server running on your computer.
- Use SQL Server Profiler to trace server and database activity.
- Implement DDL triggers that enable you to audit changes to the structure of database objects.
- Use event notifications to capture and monitor significant events for a SQL Server instance.

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
- Features of SQL Server Integration Services

Lab : Transferring Data

- Creating an SSIS Package
- Deploying an SSIS Package
- Using SSIS to Extract Data, Perform Lookups, Sort, and Split Data

After completing this module, students will be able to:

- Describe the problems surrounding data transfer and the tools that SQL Server 2005 provides to perform data transfer.
- Describe the purpose of SQL Server Integration Services.

- Use SQL Server Integration Services to transfer data into a SQL Server database.
- Describe the features of SQL Server Integration Services.

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 : Automating Administrative Tasks

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

After completing this module, students will be able to:

- Define SQL Server 2005 administrative tasks and schedule these tasks to run automatically.
- Configure SQL Server Agent to support automatic task scheduling.
- Script tasks by using SQL Server jobs, and define operators for managing these jobs.
- Define alerts to warn operators about events raised by SQL Server.
- Define and manage administrative tasks that span multiple servers.
- Configure SQL Server Agent security.

Module 8: Implementing Replication

This module explains the purpose of replication, introduces the concepts underpinning replication, and describes how to implement replication in several common scenarios.

Lessons

- Overview of Replication
- Implementing Replication
- Configuring Replication in Some Common Scenarios

Lab : Implementing Replication

- Creating a Publication
- Creating a Subscription

- Implementing HTTP Merge Replication

After completing this module, students will be able to:

- Describe replication and its components.
- Configure and implement replication.
- Use replication to meet the requirements of some common scenarios.

Module 9: 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
- Implementing Peer-to-Peer Replication

Lab : Maintaining High Availability

- Configuring Database Mirroring to Support Failover
- Implementing Distributed High Availability

After completing this module, students will be able to:

- Describe the factors affecting database availability.
- Explain how to implement clustering to support fast failover of computers running Microsoft SQL Server instances.
- Describe how to use SQL Server mirroring to implement a software solution for fast failover.
- Describe how to implement log shipping to support fast recovery of a standby SQL Server database.
- Explain how to use peer-to-peer replication to implement high availability in a distributed environment.

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.