



Broward Community College

Course Outline

STATUS: A

COMMON COURSE NUMBER: CTS2437C

COURSE TITLE: Administering a Microsoft SQL Server Database

CREDIT HOURS: 4

CONTACT HOURS BREAKDOWN:

Lecture/Discussion 48

Lab 16

Other

Contact Hours/Week 4

CATALOG COURSE DESCRIPTION:

This course provides students with the knowledge and skills required to install, configure, administer, and troubleshoot the client-server database management system of Microsoft SQL Server. The skills developed by students completing this course will help prepare them for the Microsoft Administering a SQL Server certification exam.

Prerequisite: CCTS1433C and (CEN1301C or CEN1509C)
(with a grade of C or higher)

Corequisite: None

UNIT TITLES:

1. SQL Server Overview
2. Planning to Install SQL Server
3. Managing Database Files
4. Managing Security
5. Performing Administrative Tasks
6. Backing Up Databases
7. Restoring Databases
8. Monitoring SQL Server for Performance
9. Transferring Data
10. Maintaining High Availability
11. Introducing Replication

I. Course Overview:

Upon successful completion of this course, the students should be able to describe SQL Server architecture, plan for a SQL Server installation, and then install and administer an instance of SQL Server.

II. Units:

Unit 1. 1. SQL Server Overview

General Outcome:

1.0 The students should be able to discuss the structure and uses of SQL Server.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 1.1 Describe SQL Server and its supported operating system.
- 1.2 Describe SQL Server architecture.
- 1.3 Describe SQL Server databases.
- 1.4 Describe SQL Server security.
- 1.5 Describe SQL Server querying, implementation, administration, and data warehousing activities, as well as client application design options.

Unit 2. 2. Planning to Install SQL Server

General Outcome:

2.0 The students should be able to install SQL Server.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 2.1 Determine hardware requirements for SQL Server and the SQL Server management tools.
- 2.2 Describe the various SQL Server Editions.
- 2.3 Describe the different types of licensing.
- 2.4 Determine software installation options that are appropriate for your environment.
- 2.5 Describe various methods of installing an instance SQL Server and install it by using SQL Server Setup.
- 2.6 Verify the installation of SQL Server.
- 2.7 Configure SQL Server Enterprise Manager.
- 2.8 Troubleshoot the installation.

Unit 3. 3. Managing Database Files

General Outcome:

3.0 The students should be able to administer the files on a SQL Server.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 3.1 Describe how SQL Server stores data and handle transactions.
- 3.2 Create a database, including specifying options during and after database creation.
- 3.3 Grow, shrink, or delete a database.
- 3.4 Determine the placement of database files and transaction logs for performance and fault tolerance.
- 3.5 Optimize a database by using hardware-based RAID.
- 3.6 Determine when and how to use filegroups to optimize a database.
- 3.7 Optimize a database by using filegroups with hardware-based RAID.
- 3.8 Estimate the amount of space that a database requires.

Unit 4. 4. Managing Security

General Outcome:

4.0 The students should be able to administer SQL Server security.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 4.1 Implement Windows Authentication Mode and Mixed Authentication Mode.
- 4.2 Assign login accounts to database user accounts and roles.
- 4.3 Assign permissions to user accounts and roles.
- 4.4 Manage security within SQL Server.
- 4.5 Manage security with views and stored procedures.
- 4.6 Create and use application roles to manage application security.
- 4.7 Manage SQL Server security in the enterprise environment.

Unit 5. 5. Performing Administrative Tasks

General Outcome:

5.0 The students should be able to perform basic database administration tasks on a SQL Server.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 5.1 Perform common SQL Server configuration tasks.
- 5.2 Describe how to upgrade SQL Servers.
- 5.3 Describe routine database administration tasks.
- 5.4 Automate routine maintenance tasks by creating and scheduling jobs.
- 5.5 Create alerts and operators.
- 5.6 Troubleshoot automated jobs, alerts, or notification.
- 5.7 Automate administrative jobs in a multiserver environment.

Unit 6. 6. Backing Up Databases

General Outcome:

6.0 The students should be able to manage backups on a SQL Server.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 6.1 Create backup files and backup sets.
- 6.2 Back up user and system databases by using Transact-SQL and SQL Server Enterprise manager.
- 6.3 Back up databases that are created on multiple files and filegroups.
- 6.4 Apply the appropriate backup options to each of the different SQL Server backup methods.
- 6.5 Use the BACKUP LOG statement to back up and clear transaction logs.
- 6.6 Design an appropriate backup strategy.

Unit 7. 7. Restoring Databases

General Outcome:

7.0 The students should be able to recover from database disasters.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 7.1 Describe the SQL Server recovery process.
- 7.2 Verify backups and perform specific tasks that enable the restore process.
- 7.3 Use the RESTORE statement to get information about a backup file before you restore a database, file, or transaction log.
- 7.4 Restore backups from different backup types and use the appropriate options.
- 7.5 Restore damaged system databases.

Unit 8. 8. Monitoring SQL Server for Performance

General Outcome:

8.0 The students should be able to tune the performance of a SQL Server.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 8.1 Describe the reasons why monitoring SQL Server is important.
- 8.2 Develop a performance monitoring and tuning methodology.
- 8.3 Describe the tools available for monitoring SQL Server.
- 8.4 Perform common monitoring and tuning tasks by using counters and appropriate tools.

Unit 9. 9. Transferring Data

General Outcome:

9.0 The students should be able to import and export data to and from a SQL Server.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 9.1 Describe the rationale for, and the process of, importing, exporting, and transforming data.
- 9.2 Describe the tools for importing and exporting data in SQL Server.
- 9.3 Transform data by using Data Transformation Services (DTS).
- 9.4 Create and edit a DTS package by using the DTS Import and DTS Export Wizards.

Unit 10. 10. Maintaining High Availability

General Outcome:

10.0 The students should be able to maintain the integrity of a SQL Server.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

10.1 Determine availability requirements and strategies for a Microsoft .NET Enterprise Server environment.

10.2 Use SQL Server failover clustering.

10.3 Configure a standby server and use log shipping to maintain its integrity.

Unit 11. 11. Introducing Replication

General Outcome:

11.0 The students should be able to explain the process of replication.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 11.1 Describe the various methods to distribute data in SQL Server.
- 11.2 Explain the publisher-subscriber metaphor, including articles, publications, and subscriptions.
- 11.3 Describe SQL Server replication agents.
- 11.4 Explain the SQL Server replication types.
- 11.5 Describe the physical replication models.