

KOENIG SOLUTIONS • COURSE OUTLINE

55316 - Administering a SQL Database (Microsoft)

Learn to secure, back up, restore, automate and monitor SQL Server databases, and import and export data efficiently.

5 Days

40 HOURS

15

MODULES

51

TOPICS

51

HANDS-ON ACTIVITIES

COURSE OVERVIEW

The 55316 - Administering a SQL Database course is a comprehensive SQL database class designed to provide learners with essential skills for managing and maintaining SQL Server databases. Through a blend of theory and practical exercises, students learn about various aspects of SQL Server security, including Authenticating connections, Authorizing logins, and Managing server and database roles. The course covers how to protect data with encryption and auditing, implement Backup strategies, restore databases, and automate SQL management tasks. Moreover, it delves into advanced topics such as Monitoring with alerts and notifications, managing SQL Server using PowerShell, Tracing with Extended Events, and troubleshooting common issues. Participants will also gain knowledge on Data import and export techniques, ensuring well-rounded expertise in SQL Server administration. By the end of this about SQL course, learners will be equipped with the skills necessary to efficiently administer a SQL database environment, enhancing their professional capabilities in the field of database management.

Who Should Attend

The course 55316 - Administering a SQL Database equips professionals with essential skills for managing SQL Server databases and security.

Database Administrators

IT Professionals responsible for SQL Server management

System Engineers tasked with database security and role management

Data Protection Officers overseeing compliance and data integrity

Systems Architects designing database infrastructure

Technical Support Specialists providing SQL Server troubleshooting

SQL Developers needing to understand the administrative aspects of SQL Server

Security Consultants focusing on database encryption and auditing

Data Analysts requiring knowledge of SQL Server backup and restore

Network Administrators involved in multi-server SQL Server environments

DevOps Engineers integrating SQL Server management into automation workflows

Cloud Database Administrators managing Azure SQL Databases

IT Managers overseeing database administration teams

Data Scientists needing to import and export data efficiently

PowerShell Users automating SQL Server configuration and maintenance

LEARNING OBJECTIVES

- Explain authentication and authorization across SQL Server and databases
- Configure server, database and user-defined roles
- Apply encryption and auditing to protect data
- Plan backup strategies and restore databases to a point in time
- Implement automation with SQL Server Agent and multi-server jobs
- Configure alerts, notifications and Database Mail for monitoring
- Administer SQL Server and Azure SQL Database using PowerShell
- Troubleshoot service, connectivity and login issues

15 Modules, 51 Topics

01

4 Activities

SQL Server Security

TOPICS

Authenticating Connections to SQL Server ·
Authorizing Logins to Connect to databases ·
Authorization Across Servers · Partially
Contained Databases

02

3 Activities

Assigning Server and Database Roles

TOPICS

Working with Server Roles · Working with Fixed
Database Roles · User-Defined Database Roles

03

3 Activities

Authorizing Users to Access Resources

TOPICS

Authorizing User Access to Objects · Authorizing Users to Execute Code · Configuring Permissions at the Schema Level

04

4 Activities

Protecting Data with Encryption and Auditing

TOPICS

- Options for auditing data access in SQL Server
- Implementing SQL Server Audit
- Managing SQL Server Audit
- Protecting Data with Encryption

05

3 Activities

Recovery Models and Backup Strategies

TOPICS

Understanding Backup Strategies · SQL Server
Transaction Logs · Planning Backup Strategies

06

3 Activities

Backing Up SQL Server Databases

TOPICS

Backing Up Databases and Transaction Logs ·
Managing Database Backups · Advanced
Database Options

07**4 Activities**

Restoring SQL Server Databases

TOPICS

Understanding the Restore Process · Restoring Databases · Advanced Restore Scenarios · Point-in-Time Recovery

08**4 Activities**

Automating SQL Server Management

TOPICS

Automating SQL Server management · Working with SQL Server Agent · Managing SQL Server Agent Jobs · Multi-server Management

09**3 Activities**

Configuring Security for SQL Server Agent

TOPICS

Understanding SQL Server Agent Security · Configuring Credentials · Configuring Proxy Accounts

10**4 Activities**

Monitoring SQL Server with Alerts and Notifications

TOPICS

Monitoring SQL Server Errors · Configuring Database Mail · Operators, Alerts, and Notifications · Alerts in Azure SQL Database

11**4 Activities**

Introduction to Managing SQL Server by Using PowerShell

TOPICS

- Getting Started with Windows PowerShell
- Configure SQL Server using PowerShell
- Administer and Maintain SQL Server with PowerShell
- Managing Azure SQL Databases using PowerShell

12**2 Activities**

Tracing Access to SQL Server with Extended Events

TOPICS

Extended Events Core Concepts · Working with Extended Events

13**3 Activities**

Monitoring SQL Server

TOPICS

Monitoring activity · Capturing and Managing Performance Data · Analyzing Collected Performance Data

14

3 Activities

Troubleshooting SQL Server

TOPICS

Applying a Troubleshooting Methodology · Resolving Service-Related Issues · Resolving Connectivity and Login issues

15

4 Activities

Importing and Exporting Data

TOPICS

Transferring Data to and from SQL Server · Importing and Exporting Table Data · Using bcp and BULK INSERT to Import Data · Deploying Data-Tier Applications

HANDS-ON ACTIVITIES

Practise What You Learn

#	MODULE	ACTIVITY
01	SQL Server Security	LAB 1: SQL SERVER SECURITY ■ Authenticating Connections to SQL Server ■ Authorizing Connections to databases ■ Authorization across server instances ■ Authorizing Connections to databases
02	Assigning Server and Database Roles	LAB 1: ASSIGNING SERVER AND DATABASE ROLES ■ Using Server Roles ■ Using Database Roles ■ Using User-defined Database Roles & Application Roles
03	Authorizing Users to Access Resources	LAB 1: AUTHORIZING USERS TO ACCESS RESOURCES ■ Assigning Fixed and User-Defined Server Roles ■ Managing Database Roles and Users ■ Configure Permissions at the Schema Level
04	Protecting Data with Encryption and Auditing	LAB 1: USING AUDITING AND ENCRYPTION ■ Auditing with Temporal Tables ■ Using SQL Server Audit ■ View Audit Output ■ Using Dynamic Data Masking
05	Recovery Models and Backup Strategies	LAB 1: UNDERSTANDING SQL SERVER RECOVERY MODELS ■ Backup Databases ■ Transaction Log Backups ■ Shrinking a database
06	Backing Up SQL Server Databases	LAB 1: BACKING UP DATABASES ■ Backing Up Databases ■ Verifying Backups ■ Using Advanced Backup Features

#	MODULE	ACTIVITY
07	Restoring SQL Server Databases	LAB 1: RESTORING SQL SERVER DATABASES - Determining the order of restores - Restoring databases - Restore encrypted backup - Point-in-Time restore
08	Automating SQL Server Management	LAB 1: AUTOMATING SQL SERVER MANAGEMENT - Using SQL Server Agent - Scripting SQL Server Agent jobs - Viewing job history - Multimaster management
09	Configuring Security for SQL Server Agent	LAB 1: CONFIGURING SQL SERVER AGENT - Assigning a security context to job steps - Create credentials - Create a proxy account
10	Monitoring SQL Server with Alerts and Notifications	LAB 1: MONITORING SQL SERVER WITH ALERTS AND NOTIFICATIONS - Working with Database Engine Error Logs - Configuring Database Mail - Configure Operators and Alerts - Configuring Alerts in Azure SQL Database (Optional)
11	Introduction to Managing SQL Server by Using PowerShell	LAB 1: USING POWERSHELL TO MANAGE SQL SERVER - Exploring SQL Server Management Objects (SMOs) - Configure database and Instance features with PowerShell - Manage logins and backups with PowerShell - Create an Azure SQL Database with PowerShell
12	Tracing Access to SQL Server with Extended Events	LAB 1: USING SQL SERVER EXTENDED EVENTS - Create Extended Events sessions - Working with Extended Events sessions
13	Monitoring SQL Server	LAB 1: MONITORING SQL SERVER - Using Performance Monitor - Configuring Data Collection - Viewing the Reports
14	Troubleshooting SQL Server	LAB 1: TROUBLESHOOTING SQL SERVER - Troubleshooting errors - Troubleshooting services - Troubleshooting logins
15	Importing and Exporting Data	LAB 1: IMPORTING AND EXPORTING DATA - Disabling and Enabling Constraints - Using the Import and Export Wizard - Import with bcp and BULK INSERT - Working with DACPACs and BACPACs

WHAT IS INCLUDED

Everything You Need to Succeed

- Koenig course material for every module
- Delivery by certified instructors and subject matter experts
- Hands-on exercises throughout the course
- Course completion certificate from Koenig

ABOUT KOENIG

Who We Are

Established in 1993, Koenig Solutions is a globally recognised training provider with 35+ technology partnerships, 5,000+ training programmes and a network of certified instructors and subject matter experts, supporting individuals and enterprise teams worldwide.

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Live Online Classes (ILO)

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