

# Course Outline | Microsoft SQL Server System 2014 Admin Fundamentals

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3 day(s)

## Overview

This 3 day course is intended for students who need to learn the essential skills necessary to maintain a Microsoft SQL Server 2014 system infrastructure. Being concise and hands-on, it is aimed at quickly getting students familiar with the Microsoft SQL Server 2014 administration concepts, tools and utilities. This course is an abridged version of the full 5 day "Microsoft SQL Server 2014 System Administration" course. The installation of SQL Server 2014, covered in the first module of the course, is optional and can be omitted to free up time for other topics if desired.

Attendees will gain insight into the infrastructure and architecture of SQL Server, enabling individuals to fully understand the product with which they are dealing. Configuration of server instances and databases is given full treatment, as are database transaction logs, and the creation and maintenance of indexes. Concise treatment is given to managing SQL Server security, including both at the server and database level. The focus then shifts to examining how best to move and protect data, such as when importing or exporting it between heterogeneous data sources, backing it up to external media, and restoring data from a backup. Many tasks involved in the day to day administration of a SQL Server instance can be performed automatically, making an administrators life potentially simpler, and such is the subject matter in the module dealing with SQL Server Automation. The final part of the course looks at monitoring and troubleshooting SQL Server performance and related issues.

## Objectives

Upon successful completion of this course, students will be able to:

- Configure a SQL Server 2014 Instance
- Create, Configure and Manage Databases
- Implement and Manage Indexes
- Understand and Implement SQL Server 2014 Security
- Understand Data Transfer Utilities
- Backup and Restore Databases
- Automate Tasks in SQL Server 2014
- Monitor and Troubleshoot SQL Server 2014
- Understand SQL Server 2014 Transactions and Locking

## Prerequisites

Students should be familiar with working in a Microsoft Windows Server operating system environment. Delegates should also have an understanding of the fundamental design of relational databases including, but not restricted to, the purpose of primary and foreign keys, entity relationships, and data normalization. A working knowledge of the SQL language (such as might be gained from attending the 2 day "SQL Server 2014 Introduction to Querying" course) will also be assumed.

## Course Outline

### 1. Install and Configure a SQL Server 2014 Instance

- Overview of SQL Server 2014
- Preparing for an Installation (optional)
- Installing SQL Server 2014 (optional)
- Configuring Instance-Level Settings

### 2. Configuring and Managing Databases

- Creating and Managing Files and Filegroups
- Configuring Databases
- Managing Log Files

### 3. Creating and Managing Indexes

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- SQL Server Index Architecture
- Creating and Modifying Indexes
- Managing Index Fragmentation
- Understanding and Managing Statistics

## 4. SQL Server 2012 Security

- Managing Logins and Server Roles
- Managing Users and Database Roles
- Assigning and Managing Permissions
- Using Schemas

## 5. Transferring Data

- Overview of Copying and Exporting Data
- Using BCP to Import and Export Data
- BULK INSERT
- OPENROWSET(BULK)
- SELECT INTO
- Using the SQL Server Import and Export Wizard
- Introducing SQL Server Integration Services (SSIS)

## 6. Backups and Recovery

- Understanding Database Recovery Models
- Understanding Backup Types
- Backup Options
- Backup URL
- Encrypted Backups
- Performing Database and Log Backups
- Backing Up System Databases
- Viewing Backup History
- Restoring Database and Log Backups
- Restoring System Databases

## 7. SQL Server Automation

- Overview of SQL Server Automation
- The SQL Server Agent Service
- Configuring Credentials and Proxy Accounts
- Implementing Jobs
- Implementing Operators and Notifications
- Implementing Alerts
- Maintenance Plans

## 8. Monitoring and Troubleshooting SQL Server

- Introduction to Monitoring SQL Server
- Using DMVs and DMFs
- Activity Monitor
- Performance Monitor
- SQL Server Profiler
- Diagnosing Common Issues

## 9. Transactions and Locking

- Understanding Transactions
- Understanding SQL Server Lock Management
- Diagnosing Concurrency Issues