

# T-SQL & SQL Server: Queries, Backup & Auditing

Learn to write T-SQL queries and manage, secure, back up and troubleshoot SQL Server 2019 databases.

**19**

MODULES

**58**

TOPICS

**19**

HANDS-ON LABS

## COURSE OVERVIEW

This course covers writing Transact-SQL queries, including sorting, filtering, joins, subqueries, stored procedures and views. It then moves into SQL Server architecture, installation, database storage and maintenance, followed by authentication, authorization, server and database roles, and controlling user access. Further modules address auditing, encryption, backup and restore strategies, automation with SQL Server Agent, extended events, performance monitoring, troubleshooting and methods for transferring data.

## WHO THIS COURSE IS FOR

Database Administrators

Database Developers

SQL Developers

Data Analysts

Systems Administrators

## LEARNING OBJECTIVES

- Write T-SQL queries using SELECT, sorting and filtering
- Combine data using JOIN operations and subqueries
- Create stored procedures and views
- Describe SQL Server architecture and install SQL Server 2019
- Configure database storage and perform database maintenance
- Manage authentication, authorization and server and database roles
- Implement auditing and encryption for SQL Server data
- Plan and perform backup and restore strategies

# 19 Modules, 58 Topics

01

Lab

## Getting Started with Transact-SQL

### TOPICS

Introduction to Transact-SQL · Using the SELECT statement

02

Lab

## Sorting and Filtering Query Results

### TOPICS

Sorting query results · Filtering the data

03

Lab

## Using Joins and Subqueries

### TOPICS

Using JOIN operations · Using subqueries

04

Lab

## Stored Procedure and View

### TOPICS

- Creating Simple and Parameterized Stored Procedure
- Create Simple and Complex View

05

Lab

## SQL Server Components and Architecture

### TOPICS

- Overview of SQL Server Architecture
- Introduction to the SQL Server Platform
- Installing and Configuring SQL Server 2019
- Installation changes/ Feature Selection /New Tab

06

Lab

## Working with Databases

### TOPICS

- Introduction to Data Storage with SQL Server
- Managing Storage for System and user Databases
- Configuring the Buffer Pool Extension and Hybrid buffer pool

**07****Lab**

## Performing Database Maintenance

### TOPICS

- Ensuring Database Integrity
- Tempdb Configuration and Memory-optimized TempDB Metadata
- Maintaining Indexes

**08****Lab**

## SQL Server Authentication and Authorization

### TOPICS

- Connections to SQL Server
- Privileges and permissions to Logins with Database
- Authorization Across Servers

**09****Lab**

## Working with Server and Database Roles

### TOPICS

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

**10****Lab**

## Controlling User Access

### TOPICS

- Creating and Granting User Access to Objects
- Authorizing Users to Execute Code
- Configuring Permissions at the Schema and Database level

**11****Lab**

## Database Encryption and Auditing

### TOPICS

- Auditing Data Access in SQL Server
- Implementing SQL Server Audit
- Managing SQL Server Audit
- Always Encrypted with Secure Enclaves, Database classification function on 2019

12

Lab

## Planning and Implementing a Backup Strategy

### TOPICS

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

13

Lab

## Backing Up SQL Server Databases

### TOPICS

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

14

Lab

## Restoring SQL Server 2019 Databases

### TOPICS

- Understanding the Restore Process
- Restoring SQL Databases
- Point-in-time Recovery with Advance Restore Scenario
- Accelerated Database Recovery

15

Lab

## Automating SQL Server Management

### TOPICS

- Automating SQL Server Management
- Working with SQL Server Agent
- Managing SQL Server Agent Jobs with Security Contexts

16

Lab

## SQL Server with Extended Events

### TOPICS

Extended Events Core Concepts · Working with Extended Events

17

Lab

## Performance Improvement and Monitoring SQL Server 2019

### TOPICS

Monitoring Activity · Capturing and Managing Performance Data · Query Execution and Query Plan Analysis · Statistics Internal · Query Store

18

Lab

## Troubleshooting SQL Server

### TOPICS

Monitoring SQL Server Errors · A Troubleshooting Methodology for SQL Server · Resolving Blocking and Locking in SQL Server · Resolving Connectivity and Login Issues

## Different Method of Transferring Data

### TOPICS

- Transferring Data to and from SQL Server
- Importing and Exporting Table Data
- bulk copy program and BULK INSERT to Import Data

### HANDS-ON LABS

## Practise What You Learn

| #  | MODULE                                             | ACTIVITY                                                                                      |
|----|----------------------------------------------------|-----------------------------------------------------------------------------------------------|
| 01 | <b>Getting Started with Transact-SQL</b>           | Get started with SQL Server query tools and writing queries in T-SQL                          |
| 02 | <b>Sorting and Filtering Query Results</b>         | Sort and filter data returned by SELECT queries                                               |
| 03 | <b>Using Joins and Subqueries</b>                  | Write queries with JOIN operations                                                            |
| 04 | <b>Stored Procedure and View</b>                   | Writing Stored procedure and Views                                                            |
| 05 | <b>SQL Server Components and Architecture</b>      | Identify the Edition and Version of a Running SQL Server Instance, Installing SQL Server 2019 |
| 06 | <b>Working with Databases</b>                      | Managing Database Storage                                                                     |
| 07 | <b>Performing Database Maintenance</b>             | Performing Ongoing Database Maintenance                                                       |
| 08 | <b>SQL Server Authentication and Authorization</b> | Authenticating Users                                                                          |
| 09 | <b>Working with Server and Database Roles</b>      | Assigning Server and Database Roles                                                           |
| 10 | <b>Controlling User Access</b>                     | Authorizing Users to Access Resources                                                         |
| 11 | <b>Database Encryption and Auditing</b>            | Using Auditing and Encryption                                                                 |
| 12 | <b>Planning and Implementing a Backup Strategy</b> | Understanding SQL Server Recovery Models                                                      |
| 13 | <b>Backing Up SQL Server Databases</b>             | Backing Up Databases                                                                          |

| #  | MODULE                                                        | ACTIVITY                         |
|----|---------------------------------------------------------------|----------------------------------|
| 14 | <b>Restoring SQL Server 2019 Databases</b>                    | Restoring SQL Server Databases   |
| 15 | <b>Automating SQL Server Management</b>                       | Automating SQL Server Management |
| 16 | <b>SQL Server with Extended Events</b>                        | Extended Events                  |
| 17 | <b>Performance Improvement and Monitoring SQL Server 2019</b> | Monitoring SQL Server            |
| 18 | <b>Troubleshooting SQL Server</b>                             | Troubleshooting Common Issues    |
| 19 | <b>Different Method of Transferring Data</b>                  | Importing and Exporting Data     |

#### WHAT IS INCLUDED

## Everything You Need to Succeed

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

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## Who We Are

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