

## Querying Microsoft SQL Server (Course 20461C)

### About this Course

- This course provides students with the technical skills required to write basic Transact-SQL queries for Microsoft SQL Server 2014. This course is the foundation for all SQL Server-related disciplines; namely, Database Administration, Database Development and Business Intelligence. This course helps people prepare for exam 70-461.
- **Note:** This course is designed for customers who are interested in learning SQL Server 2012 or SQL Server 2014. It covers the new features in SQL Server 2014, but also the important capabilities across the SQL Server data platform.

### Duration

- 40 h

### At Course Completion

After completing this course, students will be able to:

- Describe the basic architecture and concepts of Microsoft SQL Server 2014.
- Understand the similarities and differences between Transact-SQL and other computer languages.
- Write SELECT queries, query multiple tables, sort and filter data
- Describe the use of data types in SQL Server
- Modify data using Transact-SQL
- Use built-in functions
- Group and aggregate data
- Use subqueries, table expressions, set operators
- Use window ranking, offset and aggregate functions
- Implement pivoting and grouping sets
- Execute stored procedures
- Program with T-SQL
- Implement error handling, implement transactions

### Student Prerequisites

This course requires that you meet the following prerequisites:

- Working knowledge of relational databases.
- Basic knowledge of the Microsoft Windows operating system and its core functionality.

## Course Outline

### Module 1: Introduction to Microsoft SQL Server 2014

- The Basic Architecture of SQL Server
- SQL Server Editions and Versions
- Getting Started with SQL Server Management Studio

### Module 2: Introduction to T-SQL Querying

- Introducing T-SQL
- Understanding Sets
- Understanding Predicate Logic
- Understanding the Logical Order of Operations in SELECT statements

### Module 3: Writing SELECT Queries

- Writing Simple SELECT Statements
- Eliminating Duplicates with DISTINCT
- Using Column and Table Aliases
- Writing Simple CASE Expressions

### Module 4: Querying Multiple Tables

- Understanding Joins
- Querying with Inner Joins
- Querying with Outer Joins
- Querying with Cross Joins and Self Joins

### Module 5: Sorting and Filtering Data

- Sorting Data
- Filtering Data with a WHERE Clause
- Filtering with the TOP and OFFSET-FETCH Options
- Working with Unknown and Missing Values

### Module 6: Working with SQL Server 2014 Data Types

- Introducing SQL Server 2014 Data Types
- Working with Character Data
- Working with Date and Time Data

### Module 7: Using DML to Modify Data

- Inserting Data
- Modifying and Deleting Data

### Module 8: Using Built-In Functions

- Writing Queries with Built-In Functions
- Using Conversion Functions
- Using Logical Functions
- Using Functions to Work with NULL

### Module 9: Grouping and Aggregating Data

- Using Aggregate Functions

- Using the GROUP BY Clause
- Filtering Groups with HAVING

#### **Module 10: Using Subqueries**

- Writing Self-Contained Subqueries
- Writing Correlated Subqueries
- Using the EXISTS Predicate with Subqueries

#### **Module 11: Using Table Expressions**

- Using Derived Tables
- Using Common Table Expressions
- Using Views
- Using Inline Table-Valued Functions

#### **Module 12: Using Set Operators**

- Writing Queries with the UNION Operator
- Using EXCEPT and INTERSECT
- Using APPLY

#### **Module 13: Using Window Ranking, Offset, and Aggregate Functions**

- Creating Windows with OVER
- Exploring Window Functions

#### **Module 14: Pivoting and Grouping Sets**

- Writing Queries with PIVOT and UNPIVOT
- Working with Grouping Sets

#### **Module 15: Executing Stored Procedures**

- Querying Data with Stored Procedures
- Passing Parameters to Stored Procedures
- Creating Simple Stored Procedures
- Working with Dynamic SQL

#### **Module 16: Programming with T-SQL**

- T-SQL Programming Elements
- Controlling Program Flow
- Use IF and WHILE blocks to control program flow.

#### **Module 17: Implementing Error Handling**

- Using TRY / CATCH Blocks
- Working with Error Information

#### **Module 18: Implementing Transactions**

- Transactions and the Database Engine
- Controlling Transactions
- Isolation Levels

#### **Module 19: Improving Query Performance**

- Factors in Query Performance

- Displaying Query Performance Data

## **Module 20: Querying SQL Server Metadata**

- Querying System Catalog Views and Functions
- Executing System Stored Procedures
- Querying Dynamic Management Objects

