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## Querying Microsoft SQL Server®

**Duration: 5 Days    Course Code: 461    Version: C**

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### Overview:

This 5-day instructor led 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.

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### Target Audience:

This course is intended for Database Administrators, Database Developers, and Business Intelligence professionals. The course will very likely be well attended by SQL power users who aren't necessarily database-focused or plan on taking the exam; namely, report writers, business analysts and client application developers.

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### Objectives:

- 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
  - Use table expressions
  - Use 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
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### Prerequisites:

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

### 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

#### Lab : Working with SQL Server 2014 Tools

- Working with SQL Server Management Studio
- Creating and Organizing T-SQL scripts
- Using Books Online

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

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

#### Lab : Introduction to Transact-SQL Querying

- Executing Basic SELECT Statements
- Executing queries which filter data using predicates
- Executing queries which sort data using ORDER BY

### Module 3: Writing SELECT Queries

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

#### Lab : Writing Basic SELECT Statements

- Write simple SELECT Statements
- Eliminate Duplicates Using Distinct
- Use Table and Column Aliases
- Use a Simple CASE Expression

### Module 4: Querying Multiple Tables

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

#### Lab : Querying Multiple Tables

- Writing Queries That Use Inner Joins
- Writing Queries That Use Multiple-Table Inner Join
- Writing Queries That Use Self Joins
- Writing Queries That Use Outer Joins
- Writing Queries That Use Cross Joins

### Module 5: Sorting and Filtering Data

### Module 7: Using DML to Modify Data

- Inserting Data
- Modifying and Deleting Data

#### Lab : Using DML to Modify Data

- Inserting Data
- Updating 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

#### Lab : Using Built-In Functions

- Write queries which use conversion functions
- Write queries which use logical functions
- Write queries which test for nullability

### Module 9: Grouping and Aggregating Data

- Using Aggregate Functions
- Using the GROUP BY Clause
- Filtering Groups with HAVING

#### Lab : Grouping and Aggregating Data

- Write queries which use the GROUP BY clause
- Write queries which use aggregate functions
- Write queries which use distinct aggregate functions
- Write queries which filter groups with the HAVING clause

### Module 10: Using Subqueries

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

#### Lab : Using Subqueries

- Write queries which use self-contained subqueries
- Write queries which use scalar and multi-result subqueries
- Write queries which use correlated subqueries and EXISTS predicate

### Module 11: Using Table Expressions

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

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

- Creating Windows with OVER
- Exploring Window Functions

#### Lab : Using Window Ranking, Offset and Aggregate Functions

- Write queries which use ranking functions
- Write queries which use offset functions
- Write queries which use window aggregate functions

### Module 14: Pivoting and Grouping Sets

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

#### Lab : Pivoting and Grouping Sets

- Write queries which use the PIVOT operator
- Write queries which use the UNPIVOT operator
- Write queries which use the GROUPING SETS subclause

### Module 15: Executing Stored Procedures

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

#### Lab : Executing Stored Procedures

- Use the EXECUTE statement to invoke stored procedures
- Pass parameters to stored procedures
- Execute system stored procedures

### Module 16: Programming with T-SQL

- T-SQL Programming Elements
- Controlling Program Flow

#### Lab : Programming with T-SQL

- Declaring Variables and Delimiting Batches
- Using Control-of-Flow Elements
- Generating Dynamic SQL
- Using Synonyms

### Module 17: Implementing Error Handling

- Using TRY / CATCH Blocks
- Working with Error Information

#### Lab : Implementing Error Handling

- Redirecting Errors with TRY / CATCH
- Using THROW to Pass an Error Message

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

#### Lab : Sorting and Filtering Data

- Writing Queries That Filter Data Using a WHERE Clause
- Writing Queries That Filter Data Using an ORDER BY Clause
- Writing Queries That Filter Data Using the TOP Option
- Writing Queries That Filter Data Using the OFFSET-FETCH Clause

#### 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

#### Lab : Working with SQL Server 2014 Data Types

- Writing Queries That Return Date and Time Data
- Writing Queries That Use Date and Time Functions
- Writing Queries That Return Character Data
- Writing Queries That Use Character Function

#### Lab : Using Table Expressions

- Write Queries Which Use Views
- Write Queries Which Use Derived Tables
- Write Queries Which Use Common Table Expressions
- Write Queries Which Use Inline Table-Valued Functions

#### Module 12: Using Set Operators

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

#### Lab : Using Set Operators

- Write queries which use UNION set operators and UNION ALL multi-set operators
- Write queries which use CROSS APPLY and OUTER APPLY operators
- Write queries which use EXCEPT and INTERSECT operators

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#### Module 18: Implementing Transactions

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

#### Lab : Implementing Transactions

- Controlling transactions with BEGIN, COMMIT, and ROLLBACK
- Adding error handling to a CATCH block

#### Further Information:

For More information, or to book your course, please call us on Head Office +254 713 027 191

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