

## **Course outline: SQL Server 2019 for Developers – 4 Days**

Description: Whether you're new to SQL or a more experienced developer, this course is a great start and an eye-opener on how much you're missing out on in SQL. You will cover, how to create complex inner and outer joins, summary queries, and subqueries. What the different data types are and how to handle the common problems you run into with various types of data. How to use built-in functions or write your own to handle everyday challenges. You will also see the basics of database design and implementation using the Management Studio.

### **Prerequisites**

No particular programming experience is required, the course is taught from a developer's perspective but it will also suit those new to relational databases and database technology.

### **An introduction to relational databases and SQL**

- An introduction to client/server systems
- An introduction to the relational database model
- An introduction to SQL and SQL-based systems
- The Transact-SQL statements
- How to work with other database objects
- How to use SQL from an application program

### **How to use the Management Studio**

- An introduction to SQL Server 2019
- An introduction to the Management Studio
- How to manage the database files
- How to view and modify the database
- How to work with queries
- How to view the documentation for SQL Server

### **How to retrieve data from a single table**

- An introduction to the SELECT statement
- How to code the SELECT clause
- How to code the WHERE clause
- How to code the ORDER BY clause

### **How to retrieve data from two or more tables**

- How to work with inner joins
- How to work with outer joins
- Other skills for working with joins
- How to work with unions

## **How to code summary queries**

How to work with aggregate functions

How to group and summarize data

How to summarize data using SQL Server extensions

## **How to code subqueries**

An introduction to subqueries

How to code subqueries in search conditions

Other ways to use subqueries

Guidelines for working with complex queries

How to work with common table expressions

## **How to insert, update, and delete data**

How to create test tables

How to insert new rows

How to modify existing rows

How to delete existing rows

How to merge rows

## **How to work with data types**

A review of the SQL data types

How to convert data

## **How to work with functions**

How to work with string data

How to work with numeric data

How to work with date/time data

Other functions you should know about

## **How to design a database**

How to design a data structure

How to normalize a data structure

## **How to create a database and its tables with SQL Statements**

An introduction to DDL

How to create databases, tables, and indexes

How to use constraints

How to change databases and tables

How to work with sequences

The script used to create the AP database

## **How to create a database and its tables with the Management Studio**

How to work with a database

How to work with tables

How to generate scripts

## **How to work with views**

An introduction to views  
How to create and manage views  
How to use views  
How to use the View Designer

## **How to code scripts**

An introduction to scripts  
How to work with variables and temporary tables  
How to control the execution of a script  
Advanced scripting techniques

## **How to code stored procedures, functions, and triggers**

Procedural programming options in Transact-SQL  
How to code stored procedures  
How to code user-defined functions  
How to code triggers

## **How to manage transactions and locking**

How to work with transactions  
An introduction to concurrency and locking  
How SQL Server manages locking  
How to prevent deadlocks

## **How to manage database security**

How to work with SQL Server login IDs  
How to work with permissions  
How to work with roles  
How to manage security using the Management Studio

## **How to work with XML**

An introduction to XML  
How to work with the xml data type  
How to work with XML schemas  
Two more skills for working with XML

## **How to work with BLOBs**

An introduction to BLOBs  
How to use SQL to work with a varbinary(max) column  
A .NET application that uses a varbinary(max) column  
How to use FILESTREAM storage