# Applied SQL Fundamentals Course

SQL Server is the most deployed database today. Different types of users need to query data stored in SQL Server data structures. This 2-day instructor led course provides you with the necessary skills to query Microsoft SQL Server databases with Transact-SQL. This course starts with the basics of a SELECT statement and its syntax, and progresses to teach you how to join, aggregate, and convert data.

## Syllabus

This course is perfect for developers who need to query SQL Server databases to retrieve data, from complete beginners through to more experienced developers who can use some of the modules as reference material. It will benefit novice Database Administrators, Database Developers, and Business Intelligence professionals. It will also benefit SQL power users who need to create SQL queries, such as report writers, data analysts, and client application developers.

## Module 1: Introducing T-SQL Tools

Understanding SQL Server Management Studio (SSMS)

Understanding SQL Server Data Tools (SSDT)

Understanding Power Pivot Query Designer

Understanding SQL Server data structures

Basic data retrieval

## Module 2: Basic SELECT Queries

Set-oriented programming

Understanding the SELECT statement

Understanding column aliases and identifiers

Understanding the FROM clause

Understanding expressions, operators, predicates

Understanding the WHERE clause

Using DISTINCT, TOP predicates

Understanding the GROUP BY clause

Understanding the HAVING clause

Understanding the ORDER BY clause

Understanding binding order

Commenting code

## Module 3: Joining Tables

Understanding inner joins

Understanding outer joins

Understanding cross joins

Understanding self joins

Equal vs non-equal joins

Multi-attribute joins

Joining more than two tables

Using subqueries

Data types and joining tables

Using the UNION operator

## Module 4: Working with Functions

Understanding aggregate functions

Mathematical functions

Conversion functions

Validating data types

Understanding system time functions

Returning date and time parts

Constructing date and time values

Calculating time differences

Logical functions

Working with NULL values

Understanding string functions

## Module 5: Implementing Stored Procedures

Creating simple stored procedures

Working with parameters

Controlling program flow

Handling errors

Optimizing performance

Working with temporary tables

## Module 6: Advanced Concepts

Working with cursors

Using Common Table Expressions (CTE)

## Bonus: Applying Knowledge to Practice

Dissect existing scripts and stored procedures

How does it work?

Invoking scripts from Power Pivot

Troubleshooting and Debugging techniques

## Prerequisites

A SQL Server 2012 or above instance (installed locally on a shared server)

AdventureWorks2012 and AdventureWorksDW2012 databases

SQL Server Management Studio (SSMS) installed on every student's computer

## Instructor

Teo Lachev is a consultant, author, and mentor, with a focus on Microsoft Business Intelligence. Through his Atlanta-based company "Prologika", a Microsoft Gold Partner in Data Analytics, he designs and implements innovative solutions that bring tremendous value to his customers. Teo has authored and co-authored several SQL Server BI books and he has been leading the Atlanta Microsoft Business Intelligence group since he founded it in 2010. Microsoft has recognized Teo's expertise and contributions to the technical community by awarding him the prestigious Microsoft Most Valuable Professional (MVP) award for 12 consecutive years.