

COURSE SYLLABUS

COURSE TITLE: 50439B Basics of Transact SQL with SQL Server 2008 R2
FORMAT: Instructor-led
CERTIFICATION EXAMS: None



This course syllabus should be used to determine whether the course is appropriate for the students, based on their current skills and technical training needs. Course content, prices, and availability are subject to change without notice.

ELEMENTS OF THIS SYLLABUS ARE SUBJECT TO CHANGE.

ABOUT THE COURSE

This three-day instructor-led course provides students with the necessary knowledge to work with the data in SQL Server 2008 R2. They will learn how to use the built-in tools included with SQL Server to construct queries, do tuning, analyze a query and its performance along with how to modify existing data, perform joins, create indexes, and work with XML. The new features are discussed and their impact is explained.

The course includes instructional videos on each of the covered topics that are intended to be given to the students for their use after the training.

AUDIENCE

This course is intended for power users and IT professionals that are called on to work with SQL Server in the retrieving or modifying of data and need a good foundation to perform those functions. This would include those users that develop reports and need to create datasets that work efficiently.

AT COURSE COMPLETION

After completing this course, students will be able to:

- ▶ Use SQL Server Management Studio (SSMS).
- ▶ Use SSMS to generate efficient queries.
- ▶ Use the Object Explorer in SSMS to locate objects and view their dependencies so they know the potential effect of a change.
- ▶ Use the Template manager in SSMS to quickly import correctly formatted code that was prewritten by the SQL community.
- ▶ Customize the SSMS environment to match the user's individual needs.
- ▶ Run a trace in SQL Profiler to analyze performance of operations.
- ▶ Use the debugger with a query to troubleshoot it.
- ▶ Work with SQL Server Integration Services to do a basic package for import/export, how to save it and automatically execute it.
- ▶ Use the Database Tuning Advisor for faster queries.
- ▶ Read an SSMS Execution Plan, understand it, and learn why you need to understand it.
- ▶ Explain and perform single table queries and the proper method to develop them.
- ▶ Perform various joins between tables to reunite data stored separately such as an order and its details, or a salesperson and their sales and the product in the sale.
- ▶ Understand indexing, its impact on speed of retrieval of data, and when to not use it.
- ▶ Write code within the context of a transaction to prevent data corruption.
- ▶ Utilize TRY...CATCH error handling and learn why to use it.
- ▶ Use Stored Procedures to access data, understand the improved security of using them, and how easy they are to create via the community templates in SSMS.



- ▶ Explain the new language features and how they improve the data environment and reporting.
- ▶ Write a subquery as an advanced technique.
- ▶ Use common table expressions in a query.
- ▶ Work with the XML data type and the new methods especially for XML.

PREREQUISITES

Before attending this course, students must have:

- ▶ A working knowledge of databases but not necessarily Microsoft SQL.
- ▶ A basic understanding of relational databases.

ADDITIONAL READING

To help you prepare for this class, review the following resources:

- ▶ If you want to manipulate XML documents—“XQuery Current Status,” W3C, accessed April 5, 2013, http://www.w3.org/standards/techs/xquery#w3c_all.
- ▶ If you want to manipulate XML documents—“XPath Current Status,” W3C, accessed April 5, 2013, http://www.w3.org/standards/techs/xpath#w3c_all.

MODULE 1: COURSE OVERVIEW

Lessons

- ▶ Introduction
- ▶ Course Materials
- ▶ Facilities
- ▶ Prerequisites
- ▶ What We'll Be Discussing

Lab 1: COURSE OVERVIEW

- ▶ None

MODULE 2: THE TOOLSETS

Lessons

- ▶ SQL Server Management Studio
- ▶ sqlcmd Utility
- ▶ Business Intelligence Development Studio (BIDS)
- ▶ SQL Profiler
- ▶ Bulk Copy
- ▶ Adventure Works Sample Database
- ▶ Data Definition Language

Lab 1: THE TOOLSETS

- ▶ Set Options in SSMS
- ▶ Create a Solution and Project
- ▶ Explore the Query Editor
- ▶ Examine Graphical Execution Plans
- ▶ Use Object Explorer
- ▶ Use sqlcmd Utility
- ▶ Create a Basic SSIS Package Using the Wizard
- ▶ Run a SQL Profiler Trace

MODULE 3: DATA TYPES AND NEW T-SQL LANGUAGE FEATURES

Lessons

- ▶ SQL Server Data Types
- ▶ New Data Types
- ▶ hierarchyid Data Type
- ▶ Spatial Data



- ▶ Date and Time
- ▶ FILESTREAM Storage
- ▶ Grouping Sets

Lab 1: DATA TYPES AND NEW T-SQL LANGUAGE FEATURES

- ▶ Use hierarchyid
- ▶ FILESTREAM Storage
- ▶ Use MERGE Statement

MODULE 4: SINGLE TABLE QUERIES

Lessons

- ▶ Logical Query Processing
- ▶ Query Clauses (Listed in Logical Processing Order)
- ▶ FROM
- ▶ WHERE
- ▶ GROUP BY
- ▶ HAVING
- ▶ SELECT
- ▶ ORDER BY
- ▶ CASE
- ▶ NULLS

Lab 1: SINGLE TABLE QUERIES

- ▶ Query Clauses
- ▶ FROM
- ▶ WHERE
- ▶ GROUP BY
- ▶ HAVING
- ▶ SELECT
- ▶ ORDER BY
- ▶ CASE
- ▶ NULLS

MODULE 5: JOINING MULTIPLE TABLES

Lessons

- ▶ Normalization
- ▶ Old Style vs. New Style
- ▶ Cross Join
- ▶ Inner Join
- ▶ Outer Join
- ▶ Self-Join
- ▶ Joining Multiple Tables

Lab 1: JOINING MULTIPLE TABLES

- ▶ Cross Join
- ▶ Inner Join
- ▶ Outer Join
- ▶ Multiple Tables

MODULE 6: SUBQUERIES, COMMON TABLE EXPRESSIONS AND RANKING FUNCTIONS

Lessons

- ▶ Subqueries
- ▶ Self-Contained Subqueries
- ▶ Correlated Subqueries
- ▶ EXISTS



- ▶ Views
- ▶ Derived Tables
- ▶ Common Table Expressions
- ▶ Analytic Ranking Functions

Lab 1: SUBQUERIES, COMMON TABLE EXPRESSIONS AND RANKING FUNCTIONS

- ▶ Subqueries
- ▶ EXISTS
- ▶ Views
- ▶ Derived Tables
- ▶ Common Table Expressions

MODULE 7: INDEXING

Lessons

- ▶ Understanding Execution Plans
- ▶ Table and Index Structures
- ▶ Syntax
- ▶ Clustered Index
- ▶ Nonclustered Index on Heap
- ▶ Nonclustered Index on Clustered Index
- ▶ Syntax

Lab 1: INDEXING

- ▶ sys.dm_db_index_physical_stats
- ▶ Set STATISTICS IO
- ▶ WHERE Clause
- ▶ Narrow Indexes
- ▶ Column Uniqueness
- ▶ Column Ordering

MODULE 8: QUERY TUNING

Lessons

- ▶ System Performance Analysis
- ▶ Query Analysis
- ▶ Database Engine Tuning Advisor
- ▶ Bookmark Lookup
- ▶ Statistics Analysis
- ▶ Query Design

Lab 1: QUERY TUNING

- ▶ Performance Monitor
- ▶ Dynamic Management Views
- ▶ SQL Profiler
- ▶ Database Engine Tuning Advisor
- ▶ Query Design

MODULE 9: DATA MODIFICATION, TRANSACTIONS AND ERROR PROCESSING

Lessons

- ▶ Modifying Data INSERT
- ▶ Modifying Data UPDATE
- ▶ Modifying Data DELETE
- ▶ Transactions
- ▶ Error Processing
- ▶ Debugging in SQL Server 2008



Lab 1: DATA MODIFICATION, TRANSACTIONS AND ERROR PROCESSING

- ▶ Inserting Values
- ▶ Use Bulk Copy
- ▶ Modify Data
- ▶ DELETE Data
- ▶ Transactions
- ▶ TRY...CATCH

MODULE 10: STORED PROCEDURES AND TRIGGERS

Lessons

- ▶ Stored Procedures
- ▶ Triggers

Lab 1: STORED PROCEDURES AND TRIGGERS

- ▶ Basic Stored Procedure
- ▶ Stored Procedure with Parameters (In)
- ▶ Stored Procedure with Parameters (In and Out)
- ▶ Triggers
- ▶ INSTEAD OF Trigger

MODULE 11: XML

Lessons

- ▶ XML Introduction
- ▶ XML in SQL Server
- ▶ XML Data Type
- ▶ XML Indexes

Lab 1: XML

- ▶ None

