Course Modules for MCSA: SQL Server 2016 Database Development Training & Certification Course:

20762C Developing SQL 2016 Databases

- **Module 1: An Introduction to Database Development**
  - Introduction to the SQL Server Platform
  - SQL Server Database Development Tasks

- **Module 2: Designing and Implementing Tables**
  - Designing Tables
  - Data Types
  - Working with Schemas
  - Creating and Altering Tables

- **Module 3: Advanced Table Designs**
  - Partitioning Data
  - Compressing Data
  - Temporal Tables

- **Module 4: Ensuring Data Integrity Through Constraints**
  - Enforcing Data Integrity
  - Implementing Data Domain Integrity
  - Implementing Entity and Referential Integrity

- **Module 5: Introduction to Indexes**
  - Core Indexing Concepts
  - Data Types and Indexes
  - Heaps, Clustered, and Non-clustered Indexes
  - Single Column and Composite Indexes

- **Module 6: Designing Optimized Index Strategies**
  - Index Strategies
  - Managing Indexes
  - Execution Plans
The Database Engine Tuning Advisor
Query Store

Module 7: Columnstore Indexes
- Introduction to Columnstore Indexes
- Creating Columnstore Indexes
- Working with Columnstore Indexes

Module 8: Designing and Implementing Views
- Introduction to Views
- Creating and Managing Views
- Performance Considerations for Views

Module 9: Designing and Implementing Stored Procedures
- Introduction to Stored Procedures
- Working with Stored Procedures
- Implementing Parameterized Stored Procedures
- Controlling Execution Context

Module 10: Designing and Implementing User-Defined Functions
- Overview of Functions
- Designing and Implementing Scalar Functions
- Designing and Implementing Table-Valued Functions
- Considerations for Implementing Functions
- Alternatives to Functions

Module 11: Responding to Data Manipulation Via Triggers
- Designing DML Triggers
- Implementing DML Triggers
- Advanced Trigger Concepts

Module 12: Using In-Memory Tables
- Memory-Optimized Tables
- Natively Compiled Stored Procedures

Module 13: Implementing Managed Code in SQL Server
- Introduction to CLR Integration in SQL Server
✓ Implementing and Publishing CLR Assemblies

◆ Module 14: Storing and Querying XML Data in SQL Server
  ✓ Introduction to XML and XML Schemas
  ✓ Storing XML Data and Schemas in SQL Server
  ✓ Implementing the XML Data Type
  ✓ Using the Transact-SQL FOR XML Statement
  ✓ Getting Started with XQuery
  ✓ Shredding XML

◆ Module 15: Storing and Querying Spatial Data in SQL Server
  ✓ Introduction to Spatial Data
  ✓ Working with SQL Server Spatial Data Types
  ✓ Using Spatial Data in Applications

◆ Module 16: Storing and Querying BLOBs and Text Documents in SQL Server
  ✓ Considerations for BLOB Data
  ✓ Working with FILESTREAM
  ✓ Using Full-Text Search

◆ Module 17: SQL Server Concurrency
  ✓ Concurrency and Transactions
  ✓ Locking Internals

◆ Module 18: Performance and Monitoring
  ✓ Extended Events
  ✓ Working with Extended Events
  ✓ Live Query Statistics
  ✓ Optimize Database File Configuration
  ✓ Metrics
20761A Querying Data with Transact-SQL

- Module 1: Introduction to Microsoft SQL Server 2016
  - 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 Predicates
  - Filtering with the TOP and OFFSET-FETCH Options
  - Working with Unknown Values

- Module 6: Working with SQL Server 2016 Data Types
  - Introducing SQL Server 2016 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 Set Operators
- Writing Queries with the UNION Operator
- Using EXCEPT and INTERSECT
- Using APPLY