

---

## Developing Microsoft® SQL Server 2014® Databases

**Duration: 5 Days    Course Code: 464    Version: C**

---

### Overview:

This 5-day instructor-led course introduces SQL Server 2014 and describes logical table design, indexing and query plans. It also focusses on the creation of database objects including views, stored procedures, along with parameters, and functions. Other common aspects of procedure coding, such as indexes, concurrency, error handling, and triggers are also covered in this course. Also this course helps you prepare for the Exam 70-464.

**Note:** This course is designed for customers who are interested in learning SQL Server 2012 or SQL Server 2014. It covers the new features in SQL Server 2014, but also the important capabilities across the SQL Server data platform.

---

### Target Audience:

The primary audience for this course is IT Professionals who want to become skilled on SQL Server 2014 product features and technologies for implementing a database.

---

### Objectives:

- Introduce the entire SQL Server platform and its major tools. It will cover editions, versions, basics of network listeners, and concepts of services and service accounts.
  - Determine appropriate data types to be used when designing tables, convert data between data types, and create alias data types.
  - Be aware of good design practices regarding SQL Server tables and be able to create tables using T-SQL. (Note: partitioned tables are not covered).
  - Implement PRIMARY KEY, FOREIGN KEY, DEFAULT, CHECK and UNIQUE constraints, and investigate cascading FOREIGN KEY constraints.
  - Determine appropriate single column and composite indexes strategies.
  - Create tables as heaps and tables with clustered indexes. Also consider the design of a table and suggest an appropriate structure.
  - Read and interpret details of common elements from execution plans.
  - Design effective non-clustered indexes.
  - Design and implement views
  - Design and implement stored procedures.
  - Work with table types, table valued parameters and use the MERGE statement to create stored procedures that update data warehouses.
  - Design and implement functions, both scalar and table-valued. (Also describe where they can lead to performance issues).
  - Perform basic investigation of a deadlock situation and learn how transaction isolation levels affect application concurrency.
  - Use both traditional T-SQL error handling code and structured exception handling.
  - Design and implement DML triggers
  - Learn appropriate uses for SQL CLR integration and implement an existing .NET assembly within SQL Server.
  - Store XML data and schemas in SQL Server.
  - Perform basic queries on XML data in SQL Server.
  - Work with the GEOGRAPHY and GEOMETRY data types
  - Implement and query a full-text index.
- 

### Prerequisites:

- Knowledge of writing T-SQL queries.
  - Knowledge of basic relational database concepts.
-

## Content:

### Module 1: Introduction to Database Development

- Introduction to the SQL Server Platform
- Working with SQL Server Tools
- Configuring SQL Server Services

#### Lab : Introduction to Database Development

- Start SQL Server Management Studio

### Module 2: Designing and Implementing Tables

- Designing Tables
- Working with Schemas
- Creating and Altering Tables

#### Lab : Designing and Implementing Tables

- Improving the Design of Tables
- Creating a Schema
- Creating the Tables

### Module 3: Ensuring Data Integrity through Constraints

- Enforcing Data Integrity
- Implementing Domain Integrity
- Implementing Entity and Referential Integrity

#### Lab : Ensuring Data Integrity through Constraints

- Designing Constraints
- Testing the constraints

### Module 4: Introduction to Indexing

- Core Indexing Concepts
- Single Column and Composite Indexes
- SQL Server Table Structures
- Working with Clustered Indexes

#### Lab : Creating Indexes

- Creating Tables with Clustered Indexes
- Improving Performance through Nonclustered Indexes

### Module 5: Advanced Indexing

- Execution Plan Core Concepts
- Common Execution Plan Elements
- Working with Execution Plans
- Designing Effective Nonclustered Indexes
- Performance Monitoring

#### Lab : Planning for SQL Server 2014 Indexing

- Exploring Existing Index Statistics
- Creating Covering Indexes

### Module 6: Columnstore Indexes

- Columnstore Indexes
- Best Practices for Columnstore Indexes

#### Lab : Using In-Memory Database Capabilities

- Creating Columnstore Indexes
- Working with Memory Optimized Tables
- Working with Natively Compiled Stored Procedures

### Module 7: Designing and Implementing Views

- Introduction to Views
- Creating and Managing Views
- Performance Considerations for Views

#### Lab : Designing and Implementing Views

- Designing, Implementing and Testing the WebStock Views
- Designing and Implementing the Contacts View
- Modifying the AvailableModels View

### Module 8: Designing and Implementing Stored Procedures

- Introduction to Stored Procedures
- Working With Stored Procedures
- Implementing Parameterized Stored Procedures
- Controlling Execution Context

#### Lab : Designing and Implementing Stored Procedures

- Creating stored procedures
- Creating a parameterized stored procedure
- Altering the execution context of stored procedures

### Module 9: Designing and Implementing User-Defined Functions

- Overview of Functions
- Designing and Implementing Scalar Functions
- Designing and Implementing Table-Valued Functions
- Implementation Considerations for Functions
- Alternatives to Functions

#### Lab : Designing and Implementing User-Defined Functions

- Formatting Phone Numbers
- Modifying an Existing Function
- Resolving a Function-Related Performance Issue

### Module 11: Using In-Memory Tables

- Memory-Optimized Tables
- Native Stored Procedures

#### Lab : Using In-Memory Database Capabilities

- Creating Columnstore Indexes
- Working with Memory Optimized Tables
- Working with Natively Compiled Stored Procedures

### Module 12: Implementing Managed Code in SQL Server

- Introduction to SQL CLR Integration
- Importing and Configuring Assemblies
- Implementing SQL CLR Integration

#### Lab : Implementing Managed Code in SQL Server

- Assessing Proposed CLR Code
- Implementing a CLR Assembly
- Implementing a CLR User-defined Aggregate and CLR User-defined Data Type

### Module 13: 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 T-SQL FOR XML Statement
- Getting Started with XQuery
- Shredding XML

#### Lab : Storing and Querying XML Data in SQL Server

- Assessing appropriate Use of XML Data in SQL Server
- Testing XML Data Storage in Variables
- Retrieving Information about XML Schema Collections
- Querying SQL Server Data as XML
- Write a Stored Procedure Returning XML

### Module 14: Working with SQL Server Spatial Data

- Introduction to Spatial Data
- Working with SQL Server Spatial Data Types
- Using Spatial Data in Applications

#### Lab : Working with SQL Server Spatial Data

- Querying the Geometry Data Type
- Adding Spatial Data to an Existing Table

Module 10: Responding to Data Manipulation  
via Triggers

- Designing DML Triggers
- Implementing DML Triggers
- Advanced Trigger Concepts

Lab : Responding to Data Manipulation via  
Triggers

- Creating and Testing the Audit Trigger
- Improving the Audit Trigger

---

### Further Information:

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

[training@clclearningafrica.com](mailto:training@clclearningafrica.com)

[www.clclearningafrica.com](http://www.clclearningafrica.com)

Computer Learning Centre 2nd Floor Museum Hill Centre, Muthithi Road, Westlands, Nairobi, Kenya