

Microsoft SQL 2016 Business Intelligence Development

**Bootcamp Title – MCSA: SQL 2016 Business Intelligence Development (1 Cert)**   
Number of Days – 6  
Number of Exams – 2  
Number of Certifications – 1  
Cost - $4,995.00

Certifications:

MCSA: SQL 2016 Business Intelligence Development

Exams:

**70-767:**Implementing a SQL Data Warehouse

**70-768:**Developing SQL Data Models

Course Description:

The MCSA SQL 2016 Business Intelligence Development certification boot camp is a 6-day comprehensive deep dive into the SQL Server covering topics such as planning, monitoring, and configuring. This instructor led face to face training camp will teach you the skills needed to support a SQL Server environment.

**Course Outline**

**Module 1: Introduction to Data Warehousing**

This module describes data warehouse concepts and architecture consideration.

**Lessons**

* Overview of Data Warehousing
* Considerations for a Data Warehouse Solution

**Lab : Exploring a Data Warehouse Solution**

* Exploring data sources
* Exploring an ETL process
* Exploring a data warehouse

After completing this module, you will be able to:

* Describe the key elements of a data warehousing solution
* Describe the key considerations for a data warehousing solution

**Module 2: Planning Data Warehouse Infrastructure**

This module describes the main hardware considerations for building a data warehouse.

**Lessons**

* Considerations for data warehouse infrastructure.
* Planning data warehouse hardware.

**Lab : Planning Data Warehouse Infrastructure**

* Planning data warehouse hardware

After completing this module, you will be able to:

* Describe the main hardware considerations for building a data warehouse
* Explain how to use reference architectures and data warehouse appliances to create a data warehouse

**Module 3: Designing and Implementing a Data Warehouse**

This module describes how you go about designing and implementing a schema for a data warehouse.

**Lessons**

* Data warehouse design overview
* Designing dimension tables
* Designing fact tables
* Physical Design for a Data Warehouse

**Lab : Implementing a Data Warehouse Schema**

* Implementing a star schema
* Implementing a snowflake schema
* Implementing a time dimension table

After completing this module, you will be able to:

* Implement a logical design for a data warehouse
* Implement a physical design for a data warehouse

**Module 4: Columnstore Indexes**

This module introduces Columnstore Indexes.

**Lessons**

* Introduction to Columnstore Indexes
* Creating Columnstore Indexes
* Working with Columnstore Indexes

**Lab : Using Columnstore Indexes**

* Create a Columnstore index on the FactProductInventory table
* Create a Columnstore index on the FactInternetSales table
* Create a memory optimized Columnstore table

After completing this module, you will be able to:

* Create Columnstore indexes
* Work with Columnstore Indexes

**Module 5: Implementing an Azure SQL Data Warehouse**

This module describes Azure SQL Data Warehouses and how to implement them.

**Lessons**

* Advantages of Azure SQL Data Warehouse
* Implementing an Azure SQL Data Warehouse
* Developing an Azure SQL Data Warehouse
* Migrating to an Azure SQ Data Warehouse
* Copying data with the Azure data factory

**Lab : Implementing an Azure SQL Data Warehouse**

* Create an Azure SQL data warehouse database
* Migrate to an Azure SQL Data warehouse database
* Copy data with the Azure data factory

After completing this module, you will be able to:

* Describe the advantages of Azure SQL Data Warehouse
* Implement an Azure SQL Data Warehouse
* Describe the considerations for developing an Azure SQL Data Warehouse
* Plan for migrating to Azure SQL Data Warehouse

**Module 6: Creating an ETL Solution**

At the end of this module you will be able to implement data flow in a SSIS package.

**Lessons**

* Introduction to ETL with SSIS
* Exploring Source Data
* Implementing Data Flow

**Lab : Implementing Data Flow in an SSIS Package**

* Exploring source data
* Transferring data by using a data row task
* Using transformation components in a data row

After completing this module, you will be able to:

* Describe ETL with SSIS
* Explore Source Data
* Implement a Data Flow

**Module 7: Implementing Control Flow in an SSIS Package**

This module describes implementing control flow in an SSIS package.

**Lessons**

* Introduction to Control Flow
* Creating Dynamic Packages
* Using Containers
* Managing consistency.

**Lab : Implementing Control Flow in an SSIS Package**

* Using tasks and precedence in a control flow
* Using variables and parameters
* Using containers

**Lab : Using Transactions and Checkpoints**

* Using transactions
* Using checkpoints

After completing this module, you will be able to:

* Describe control flow
* Create dynamic packages
* Use containers

**Module 8: Debugging and Troubleshooting SSIS Packages**

This module describes how to debug and troubleshoot SSIS packages.

**Lessons**

* Debugging an SSIS Package
* Logging SSIS Package Events
* Handling Errors in an SSIS Package

**Lab : Debugging and Troubleshooting an SSIS Package**

* Debugging an SSIS package
* Logging SSIS package execution
* Implementing an event handler
* Handling errors in data flow

After completing this module, you will be able to:

* Debug an SSIS package
* Log SSIS package events
* Handle errors in an SSIS package

**Module 9: Implementing a Data Extraction Solution**

This module describes how to implement an SSIS solution that supports incremental DW loads and changing data.

**Lessons**

* Introduction to Incremental ETL
* Extracting Modified Data
* Loading modified data
* Temporal Tables

**Lab : Extracting Modified Data**

* Using a datetime column to incrementally extract data
* Using change data capture
* Using the CDC control task
* Using change tracking

**Lab : Loading a data warehouse**

* Loading data from CDC output tables
* Using a lookup transformation to insert or update dimension data
* Implementing a slowly changing dimension
* Using the merge statement

After completing this module, you will be able to:

* Describe incremental ETL
* Extract modified data
* Load modified data.
* Describe temporal tables

**Module 10: Enforcing Data Quality**

This module describes how to implement data cleansing by using Microsoft Data Quality services.

**Lessons**

* Introduction to Data Quality
* Using Data Quality Services to Cleanse Data
* Using Data Quality Services to Match Data

**Lab : Cleansing Data**

* Creating a DQS knowledge base
* Using a DQS project to cleanse data
* Using DQS in an SSIS package

**Lab : De-duplicating Data**

* Creating a matching policy
* Using a DS project to match data

After completing this module, you will be able to:

* Describe data quality services
* Cleanse data using data quality services
* Match data using data quality services
* De-duplicate data using data quality services

**Module 11: Using Master Data Services**

This module describes how to implement master data services to enforce data integrity at source.

**Lessons**

* Introduction to Master Data Services
* Implementing a Master Data Services Model
* Hierarchies and collections
* Creating a Master Data Hub

**Lab : Implementing Master Data Services**

* Creating a master data services model
* Using the master data services add-in for Excel
* Enforcing business rules
* Loading data into a model
* Consuming master data services data

After completing this module, you will be able to:

* Describe the key concepts of master data services
* Implement a master data service model
* Manage master data
* Create a master data hub

**Module 12: Extending SQL Server Integration Services (SSIS)**

This module describes how to extend SSIS with custom scripts and components.

**Lessons**

* Using scripting in SSIS
* Using custom components in SSIS

**Lab : Using scripts**

* Using a script task

After completing this module, you will be able to:

* Use custom components in SSIS
* Use scripting in SSIS

**Module 13: Deploying and Configuring SSIS Packages**

This module describes how to deploy and configure SSIS packages.

**Lessons**

* Overview of SSIS Deployment
* Deploying SSIS Projects
* Planning SSIS Package Execution

**Lab : Deploying and Configuring SSIS Packages**

* Creating an SSIS catalog
* Deploying an SSIS project
* Creating environments for an SSIS solution
* Running an SSIS package in SQL server management studio
* Scheduling SSIS packages with SQL server agent

After completing this module, you will be able to:

* Describe an SSIS deployment
* Deploy an SSIS package
* Plan SSIS package execution

**Module 14: Consuming Data in a Data Warehouse**

This module describes how to debug and troubleshoot SSIS packages.

**Lessons**

* Introduction to Business Intelligence
* An Introduction to Data Analysis
* Introduction to reporting
* Analyzing Data with Azure SQL Data Warehouse

**Lab : Using a data warehouse**

* Exploring a reporting services report
* Exploring a PowerPivot workbook
* Exploring a power view report

After completing this module, you will be able to:

* Describe at a high level business intelligence
* Show an understanding of reporting
* Show an understanding of data analysis
* Analyze data with Azure SQL data warehouse

**Module 1: Introduction to Business Intelligence and Data Modeling**

This module introduces key BI concepts and the Microsoft BI product suite.

**Lessons**

* Introduction to Business Intelligence
* The Microsoft business intelligence platform

**Lab : Exploring a BI Solution**

* Exploring a Data Warehouse
* Exploring a data model

After completing this module, students will be able to:

* Describe BI scenarios, trends, and project roles.
* Describe the products that make up the Microsoft BI platform.

**Module 2: Creating Multidimensional Databases**

This module describes how to create multidimensional databases using SQL Server Analysis Services.

**Lessons**

* Introduction to Multidimensional Analysis
* Creating Data Sources and Data Source Views
* Creating a Cube
* Overview of Cube Security
* Configure SSAS
* Monitoring SSAS

**Lab : Creating a multidimensional database**

* Creating a Data Source
* Creating and Modifying a data Source View
* Creating and Modifying a Cube

After completing this module, you will be able to:

* Describe considerations for a multidimensional database.
* Create data sources and data source views.
* Create a cube
* Implement security in a multidimensional database.
* Configure SSAS to meet requirements including memory limits, NUMA and disk layout.
* Monitor SSAS performance.

**Module 3: Working with Cubes and Dimensions**

This module describes how to implement dimensions in a cube.

**Lessons**

* Configuring Dimensions
* Defining Attribute Hierarchies
* Sorting and Grouping Attributes
* Slowly Changing Dimensions

**Lab : Working with Cubes and Dimensions**

* Configuring Dimensions
* Defining Relationships and Hierarchies
* Sorting and Grouping Dimension Attributes

After completing this module, you will be able to:

* Configure dimensions.
* Define attribute hierarchies.
* Implement sorting and grouping for attributes.
* Implement slowly changing dimensions.

**Module 4: Working with Measures and Measure Groups**

This module describes how to implement measures and measure groups in a cube.

**Lessons**

* Working with Measures
* Working with Measure Groups

**Lab : Configuring Measures and Measure Groups**

* Configuring Measures
* Defining Dimension Usage and Relationships
* Configuring Measure Group Storage

After completing this module, you will be able to:

* Configure measures.
* Configure measure groups.

**Module 5: Introduction to MDX**

This module describes the MDX syntax and how to use MDX.

**Lessons**

* MDX fundamentals
* Adding Calculations to a Cube
* Using MDX to Query a Cube

**Lab : Using MDX**

* Querying a cube using MDX
* Creating a Calculated Member

After completing this module, you will be able to:

* Use basic MDX functions.
* Use MDX to add calculations to a cube.
* Use MDX to query a cube.

**Module 6: Customizing Cube Functionality**

This module describes how to customize a cube.

**Lessons**

* Introduction to Business Intelligence
* The Implementing Key Performance Indicators
* Implementing Actions
* Implementing Perspectives
* Implementing Translations

**Lab : Customizing a Cube**

* Implementing a KPI
* Implementing an action
* Implementing a perspective
* Implementing a translation

After completing this module, you will be able to:

* Implement KPIs in a Multidimensional database
* Implement Actions in a Multidimensional database
* Implement perspectives in a Multidimensional database
* Implement translations in a Multidimensional database

**Module 7: Implementing a Tabular Data Model by Using Analysis Services**

This module describes how to implement a tabular data model in Power Pivot.

**Lessons**

* Introduction to Tabular Data Models
* Creating a Tabular Data Model
* Using an Analysis Services Tabular Data Model in an Enterprise BI Solution

**Lab : Working with an Analysis Services Tabular Data Model**

* Creating an Analysis Services Tabular Data Model
* Configure Relationships and Attributes
* Configuring Data Model for an Enterprise BI Solution.

After completing this module, students will be able to:

* Describe tabular data models
* Describe how to create a tabular data model
* Use an Analysis Services Tabular Model in an enterprise BI solution

**Module 8: Introduction to Data Analysis Expression (DAX)**

This module describes how to use DAX to create measures and calculated columns in a tabular data model.

**Lessons**

* DAX Fundamentals
* Using DAX to Create Calculated Columns and Measures in a Tabular Data Model

**Lab : Creating Calculated Columns and Measures by using DAX**

* Creating Calculated Columns
* Creating Measures
* Creating a KPI
* Creating a Parent – Child Hierarchy

After completing this module, students will be able to:

* Describe the key features of DAX
* Create calculated columns and measures by using DAX

**Module 9: Performing Predictive Analysis with Data Mining**

This module describes how to use data mining for predictive analysis.

**Lessons**

* Overview of Data Mining
* Creating a Custom Data Mining Solution
* Validating a Data Mining Model
* Connecting to and Consuming a Data-Mining Model
* Using the Data Mining add-in for Excel

**Lab : Using Data Mining**

* Creating a Data Mining Structure and Model
* Exploring Data Mining Models
* Validating Data Mining Models
* Consuming a Data Mining Model
* Using the Excel Data Mining add-in

After completing this module, students will be able to:

* Describe considerations for data mining
* Create a data mining model
* Validate a data mining model
* Connect to a data-mining model
* Use the data mining add-in for Excel