

## **Implementing a Data Warehouse with Microsoft SQL Server 2012**

**Exam Code: 70-463**

**Duration: 40 Hrs**

### **Course Outline**

#### **Module 1: Introduction to Data Warehousing**

This module provides an introduction to the key components of a data warehousing solution and the high-level considerations you must take into account when starting a data warehousing project.

##### **Lessons**

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

##### **Lab : Exploring a Data Warehousing Solution**

- Exploring data sources
- Exploring an ETL solution
- Exploring a data warehouse

#### **Module 2: Data Warehouse Hardware**

This module describes the characteristics of typical data warehouse workloads, and explains how you can use reference architectures and data warehouse appliances to ensure you build the system that is right for your organization.

##### **Lessons**

- Considerations for Building a Data Warehouse
- Data Warehouse Reference Architectures and Appliances

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

In this module, you will learn how to implement the logical and physical architecture of a data warehouse based on industry-proven design principles

##### **Lessons**

- Logical Design for a Data Warehouse
- 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

#### **Module 4: Creating an ETL Solution with SSIS**

This module discusses considerations for implementing an ETL process, and then focuses on SQL Server Integration Services (SSIS) as a platform for building ETL solutions.

## Lessons

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

### Lab : Implementing Data Flow in a SSIS Package

- Exploring Source Data
- Transferring Data by Using a Data Flow Task
- Using Transformations in a Data Flow

## Module 5: Implementing Control Flow in an SSIS Package

Control flow in SQL Server Integration Services packages enables you to implement complex ETL solutions that combine multiple tasks and workflow logic. This module covers how to implement control flow, and design robust ETL processes for a data warehousing solution that coordinate data flow operations with other automated tasks.

## 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

## Module 6: Debugging and Troubleshooting SSIS Packages

This module describes how you can debug SQL Server Integration Services (SSIS) packages to find the cause of errors that occur during execution. Then module then covers the logging functionality built into SSIS you can use to log events for troubleshooting purposes. Finally, the module describes common approaches for handling errors in control flow and data flow.

## 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 a Data Flow

## Module 7: Implementing an Incremental ETL Process

This module describes the techniques you can use to implement an incremental data warehouse refresh process.

### Lessons

- Introduction to Incremental ETL
- Extracting Modified Data
- Loading Modified Data

### Lab : Extracting Modified Data

- Using a DateTime Column to Incrementally Extract Data
- Using a Change Data Capture
- Using Change Tracking

### Lab : Loading Incremental Changes

- Using a Lookup Transformation to Insert Dimension Data
- Using a Lookup Transformation to Insert or Update Dimension Data
- Implementing a Slowly Changing Dimension
- Using a MERGE Statement to Load Fact Data

## Module 8: Incorporating Data from the Cloud into a Data Warehouse

In this module, you will learn about how you can use cloud computing in your data warehouse infrastructure and learn about the tools and services available from the Microsoft Azure Marketplace.

### Lessons

- Overview of Cloud Data Sources
- SQL Server Database
- The Windows Azure Marketplace

### Lab : Using Cloud Data in a Data Warehouse Solution

- Creating a SQL Azure Database
- Extracting Data from a SQL Azure Database
- Obtaining Data from the Windows Azure Marketplace

## Module 9: Enforcing Data Quality

Ensuring the high quality of data is essential if the results of data analysis are to be trusted. This module explains how to use the SQL Server 2012 Data Quality Services (DQS) to provide a computer assisted process for cleansing data values and identifying and removing duplicate data entities.

### 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 : Deduplicating Data

- Creating a Matching Policy
- Using a DQS Project to Match Data

## Module 10: Using Master Data Services

This module introduces Master Data Services and explains the benefits of using it in a data warehousing context. The module also describes the key configuration options for Master Data Services, and explains how to import and export data. Finally, the module explains how to apply rules that help to preserve data integrity, and introduces the new Master Data Services Add-in for Excel.

### Lessons

- Introduction to Master Data Services
- Implementing a Master Data Services Model
- Using the Master Data Services Add-in for Excel

## Lab : Implementing Master Data Services

- Creating a Basic Model
- Editing a Model by Using the Master Data Services Add-in for Excel
- Loading Data into a Model
- Enforcing Business Rules
- Consuming Master Data Services Data

## Module 11: Extending SQL Server Integration Services

This module describes the techniques you can use to extend SQL Server Integration Services (SSIS). The module is not designed to be a comprehensive guide to developing custom SSIS solutions, but to provide an awareness of the fundamental steps required to use custom components and scripts in an ETL process that is based on SSIS.

### Lessons

- Using Custom Components in SSIS
- Using Scripts in SSIS

## Lab : Using Custom Components and Scripts

- Using a Custom Component
- Using a Script Task

## Module 12: Deploying and Configuring SSIS Packages

SQL Server Integration Services provides tools that make it easy to deploy packages to another computer. The deployment tools also manage any dependencies, such as configurations and files that the package needs. In this module, you will learn how to use these tools to install packages and their dependencies on a target computer.

## Lessons

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

### Lab : Deploying and Configuring SSIS Packages

- Create a SSIS Catalog
- Deploy an SSIS Project
- Create Environments for an SSIS Solution
- Running an SSIS Package in SQL Server Management Studio
- Scheduling SSIS Packages with SQL Server Agent

## Module 13: Consuming Data in a Data Warehouse

This module introduces Business Intelligence (BI), describes the components of SQL Server that you can use to create a BI solution, and the client tools that users can use to create reports and analyze data.

## Lessons

- Introduction to Business Intelligence
- Introduction to Reporting
- Introduction to Data Analysis

### Lab : Using Business Intelligence Tools

- Exploring a Reporting Services Report
- Exploring a PowerPivot Workbook
- Exploring a Power View Report