

Website: www.dw-learnwell.com

Contact: +91 8411002339/+91 7709292162

Email: info@dw-learnwell.com

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MSBI (SSIS, SSAS, SSRS) Syllabus

Implementing and Maintaining Microsoft SQL Server 2008 R2/2012 Integration Services

This course will enable technology professionals with little or no ETL experience to be comfortable and productive with the SSIS tools and technologies. In this course you will learn about the Business Intelligence Development Studio (BIDS) and working with Control and Data Flows to build workflows to extract, transform, and load data using a variety of data sources, transformations, and destinations. You will also become familiar with SSIS package management and package deployment along with learning to write solid code using debugging, error handling and logging techniques.

Learning Objectives(SSIS)

During this course students will learn:

- How to use Bids to create well-designed packages
- About Control Flows, how to build them using many of the built-in tasks, including the various containers
- How to use the Data Flow task to perform primary ETL operations
- About variable and configurations to make your packages dynamic and resilient to changes in environments
- About the features in BIDS and Integration Services that help you troubleshoot a package
- How to deploy and manage packages effectively
- How to write script so that you can go beyond the built-in taks, data sources and destinations, and transformations, as well as building and using custom components
- Best practices that will make it easier to develop and maintain a package over its entire life cycle
- About using Integration Services for tasks other than traditional ETL operations

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Course Outline

Module 1: Introduction to SQL Server Integration Services

The students will be introduced to the role that Integration Services plays in extracting, transforming, and loading data. The students will also be introduced to the tools that are used to build and manage Integration Services solutions.

- Lessons
 - Overview of SQL Server Integration Services
 - Using Integration Services Tools
- Lab: Introduction to SQL Server Integration Services
 - Using the Import and Export Wizard
 - Running an Integration Services Package
- After completing this module, students will be able to:
 - Describe Integration Services solutions
 - Use Integration Services tools

Module 2: Developing Integration Services Solutions

The students will be introduced to the development tasks that are involved in creating an Integration Services package.

- Lessons
 - Creating an Integration Services Solution
 - Using Variables
 - Building and Running a Solution

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- Lab : Developing Integration Services Solutions
 - Creating an Integration Services Project
 - Implementing a Package
 - Building and Running an Integration Services package
- After completing this module, students will be able to:
 - Create a SQL Server Integration Services solution.
 - Use variables.
 - Build and run a solution

Module 3: Implementing Control Flow

The students will be introduced to the tasks and precedence constraints that can be used to implement control flow in an Integration Services package.

- Lessons
 - Control Flow Tasks
 - Control Flow Precedent Constraints
 - Control Flow Containers
- Lab : Implementing Control Flow
 - Creating a Simple Control Flow
 - Configuring Precedence Constraints
 - Using Containers
- After completing this module, students will be able to:

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MSBI (SSIS, SSAS, SSRS) Syllabus

- Configure control flow tasks.
- Configure control flow precedence constraints.
- Configure control flow containers.

Module 4: Implementing Data Flow

The students will be introduced to the data flow sources, transformations, and destinations that can be used to implement a data flow task in an Integration Services control flow. It also explains how to use data flow paths to direct valid and invalid rows through the data flow.

➤ Lessons

- Data Flow Sources and Destinations
- Basic Data Flow Transformations
- Advanced Data Flow Transformations
- Data Flow Paths

➤ Lab : Implementing Data Flow

- Transferring Data
- Implementing Transformations
- Using Data Viewers
- Configuring Error Output

➤ After completing this module, students will be able to:

- Implement data flow sources and destinations.
- Implement basic data flow transformations.

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- Implement advanced data flow transformations.
- Implement data flow paths.

Module 5: Implementing Logging

The students will be introduced to how to use logging in an Integration Services package, and explained how to configure and use logging providers to generate information about a package's execution.

- Lessons
 - Overview of Integration Services Logging
 - Enabling and Configuring Logging
- Lab : Implementing Logging
 - Configuring Logging
 - Implementing Custom Logging
- After completing this module, students will be able to:
 - Describe Integration Services logging.
 - Implement Integration Services logging.

Module 6: Debugging and Error Handling

The students will be introduced to how to debug Integration Services packages by using the debugging tools in Business Intelligence Development Studio. It then explains how to implement error-handling logic in an Integration Services package.

- Lessons
 - Debugging a Package

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- Implementing Error Handling
- Lab : Debugging and Error Handling
 - Debugging a Package
 - Implementing Error Handling
 - Controlling Failure Behavior
- After completing this module, students will be able to:
 - Debug an SSIS package.
 - Implement error handling.

Module 7: Implementing Checkpoints and Transactions

The students will be introduced to what checkpoints are and how to implement them. It then discusses transactions, and describes how to implement transactional data access logic in an Integration Services package.

- Lessons
 - Implementing Checkpoints
 - Implementing Transactions
- Lab : Implementing Checkpoints and Transactions
 - Implementing Checkpoints in a Package
 - Implementing Transactions in a Package
 - Implementing a Native Transaction
- After completing this module, students will be able to:

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- Implement checkpoints.
- Implement transactions.

Module 8: Configuring and Deploying Packages

The students will be introduced to how to create Package Configurations and how to deploy Integration Services packages to production servers.

- Lessons
 - Package Configurations
 - Deploying Packages
- Lab : Configuring and Deploying Packages
 - Creating a Package Configuration
 - Preparing a Package for Deployment
 - Deploying a Package
- After completing this module, students will be able to:
 - Implement package configurations.
 - Deploy packages.

Module 9: Managing and Securing Packages

The students will be introduced to the management tasks that relate to Integration Services packages and explained how to perform those tasks by using the Integration Services management tools. It also describes how to secure Integration Services packages.

- Lessons
 - Managing Packages

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- Securing Packages
- Lab : Managing and Securing Packages
 - Importing a Package
 - Configuring and Monitoring a Package
 - Scheduling a Package
 - Securing a Package
- After completing this module, students will be able to:
 - Manage packages.
 - Secure packages.

Learning Objectives(SSAS)

Learn to define what Business Intelligence is and how it applies to a database

- Understand how the cube structure works for viewing data information
- View cubes using Excel 2008 R2/2012 and SQL Reporting Services
- See how to create cube models using SQL Server Business Intelligence Development Studio (BIDS)
- Create Data Source, Data Source Views and then create cubes with the Cube Wizard
- Learn how to create key performance indicators (KPIs)
- Work with changing and advanced dimension types
- Use relational and SSAS partitions
- Understand how to use MDX syntax for queries, functions and tasks
- Learn data mining concepts and mining structure processing
- Implement security, XMLA scripts, backups and restores for SSAS

Course Outline

Module 1: Introduction to Microsoft SQL Server Analysis Services

MSBI (SSIS, SSAS, SSRS) Syllabus

This module introduces common analysis scenarios and describes how Analysis Services provides a powerful platform for multidimensional OLAP solutions and data mining solutions. The module then describes the main considerations for installing Analysis Services.

- Lessons
 - Overview of Data Analysis Solutions
 - Overview of SQL Server Analysis Services
 - Installing SQL Server Analysis Services
- Lab : Using SQL Server Analysis Services
 - Installing SQL Server Analysis Services
 - Verifying Installation
- After completing this module, students will be able to:
 - Describe data analysis solutions.
 - Describe the key features of SQL Server Analysis Services.
 - Install SQL Server Analysis Services.

Module 2: Creating Multidimensional Analysis Solutions

This module introduces the development tools you can use to create an Analysis Services multidimensional analysis solution, and describes how to create data sources, data source views, and cubes.

- Lessons
 - Developing Analysis Services Solutions
 - Creating Data Sources and Data Source Views

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- Creating a Cube
- Lab : Creating Multidimensional Analysis Solutions
 - Creating a Data Source
 - Creating and Modifying a Data Source View
 - Creating and Modifying a Cube
- After completing this module, students will be able to:
 - Develop Analysis Services solutions.
 - Create a data source and a data source view.
 - Create a cube.

Module 3: Working with Cubes and Dimensions

This module describes how to edit dimensions and to configure dimensions, attributes, and hierarchies.

- Lessons
 - Configuring Dimensions
 - Defining Attribute Hierarchies
 - Sorting and Grouping Attributes
- Lab : Working with Cubes and Dimensions
 - Configuring Dimensions
 - Defining Relationships and Hierarchies
 - Sorting and Grouping Dimension Attributes

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- After completing this module, students will be able to:
 - Configure dimensions.
 - Define hierarchies.
 - Sort and group attributes.

Module 4: Working with Measures and Measure Groups

This module explains how to edit and configure measures and measure groups.

- Lessons
 - Working With Measures
 - Working with Measure Groups
- Lab : Working with Measures and Measure Groups
 - Configuring Measures
 - Defining Dimension Usage and Relationships
 - Configuring Measure Group Storage
- After completing this module, students will be able to:
 - Work with measures.
 - Work with measure groups.

Module 5: Querying Multidimensional Analysis Solutions

This module introduces multidimensional expressions (MDX) and describes how to implement calculated members and named sets in an Analysis Services cube.

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- Lessons
 - MDX Fundamentals
 - Adding Calculations to a Cube
- Lab : Querying Multidimensional Analysis Solutions
 - Querying a Cube by Using MDX
 - Creating a Calculated Member
 - Defining a Named Set
- After completing this module, students will be able to:
 - Describe Multidimensional Expression (MDX) fundamentals.
 - Add calculations to a cube.

Module 6: Customizing Cube Functionality

This module explains how to customize a cube by implementing key performance indicators (KPIs), actions, perspectives, and translations.

- Lessons
 - Implementing Key Performance Indicators
 - Implementing Actions
 - Implementing Perspectives
 - Implementing Translations
- Lab : Customizing Cube Functionality
 - Implementing a KPI

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- Implementing an Action
- Implementing a Perspective
- Implementing a Translation
- After completing this module, students will be able to:
 - Implement Key Performance Indicators (KPIs).
 - Implement actions.
 - Implement perspectives.
 - Implement translations.

Module 7: Deploying and Securing an Analysis Services Database

This module describes how to deploy an Analysis Services database to a production server, and how to implement security in an Analysis Services multidimensional solution.

- Lessons
 - Deploying an Analysis Services Database
 - Securing an Analysis Services Database
- Lab : Deploying and Securing an Analysis Services Database
 - Deploying an Analysis Services Database
 - Securing an Analysis Services Database
- After completing this module, students will be able to:
 - Deploy an Analysis Services database.
 - Secure an Analysis Services database.

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Module 8: Maintaining a Multidimensional Solution

This module discusses the maintenance tasks associated with an Analysis Services solution, and describes how administrators can use the Analysis Services management tools to perform them.

- Lessons
 - Configuring Processing
 - Logging, Monitoring, and Optimizing an Analysis Services Solution
 - Backing Up and Restoring an Analysis Services Database
- Lab : Maintaining a Multidimensional Solution
 - Configuring Processing
 - Implementing Logging and Monitoring
 - Backing Up and Restoring an Analysis Services Database
- After completing this module, students will be able to:
 - Configure processing settings.
 - Log, monitor, and optimize an Analysis Services solution.
 - Back up and restore an Analysis Services database.

Module 9: Introduction to Data Mining

This module introduces data mining, and describes how to implement data mining structures and models. It then explains how to validate data model accuracy.

- Lessons
 - Overview of Data Mining

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- Creating a Data Mining Solution
- Validating Data Mining Models
- Lab : Introduction to Data Mining
 - Creating a Data Mining Structure
 - Adding a Data Mining Model
 - Exploring Data Mining Models
 - Validating Data Mining Models
- After completing this module, students will be able to:
 - Describe data mining.
 - Create a data mining solution.
 - Validate data mining models.

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MSBI (SSIS, SSAS, SSRS) Syllabus

Learning Objectives(SSRS)

In this course you will learn to:

- Create tabular and list reports.
- Build expressions and how they are used within SSRS.
- Use global, field and parameter collections.
- Create Groups using the grouping pane for Details Group and Row Groups.
- Use parameters with stored procedures, with values on reports and unbound parameters.
- Create Matrix reports and see the new features of Matrix reports for SSRS 08.
- Deploy reports and use the report manager.
- Use SSRS Security, SSL and Data Source Security.
- Use Reporting Services APIs and Report Viewer Controls.
- Create a Web Service, a Web Service Subscription and Custom Assemblies.

Course Outline

Module 1: Introduction to Microsoft SQL Server Reporting Services

The students will be introduced to the role that Reporting Services plays in an organization's reporting life cycle, the key features offered by Reporting Services, and the components that make up the Reporting Services architecture.

➤ Lessons

- Overview of SQL Server Reporting Services
- Installing Reporting Services
- Reporting Services Tools

➤ Lab : Introduction to Microsoft SQL Server Reporting Services

- Exploring Report Designer
- Exploring Report Manager

➤ After completing this module, students will be able to:

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MSBI (SSIS, SSAS, SSRS) Syllabus

- Describe the features of SQL Server Reporting Services.
- Install Reporting Services.
- Describe the Reporting Services tools.

Module 2: Authoring Basic Reports

The students will learn the fundamentals of report authoring, including configuring data sources and data sets, creating tabular reports, summarizing data, and applying basic formatting.

➤ Lessons

- Creating a Basic Table Report
- Formatting Report Pages
- Calculating Values

➤ Lab : Authoring Basic Reports

- Creating a Basic Table Report
- Formatting Report Pages
- Adding Calculated Values

➤ After completing this module, students will be able to:

- Create a basic table report.
- Format report pages.
- Calculate values for a report.

Module 3: Enhancing Basic Reports

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The students will learn about navigational controls and some additional types of data regions, and how to use them to enhance a basic report.

- Lessons
 - Interactive Navigation
 - Displaying Data
- Lab : Enhancing Basic Reports
 - Using Dynamic Visibility
 - Using Document Maps
 - Initiating Actions
 - Using a List Data Region
 - Creating a Tablix Report
 - Adding Chart Subreport to Parent Report
- After completing this module, students will be able to:
 - Create reports with interactive navigation.
 - Display data in various formats.

Module 4: Manipulating Data Sets

The students will explore data sets to a greater depth, including the use of alternative data sources and interacting with a data set through the use of parameters. Students will learn how to dynamically modify the data set underlying a data region by allowing parameters to be sent to the underlying query, as well as will learn to use best practices to implement static and dynamic parameter lists when interacting with queries and stored procedures.

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- Lessons
 - Defining Report Data
 - Using Parameters and Filters
 - Using Parameter Lists
- Lab : Manipulating Data Sets
 - Using Parameters to Restrict Query Results
 - Using Parameters to Filter Report Data
 - Creating Dynamic Parameter Lists
 - Using Parameters with a Stored Procedure
 - Displaying All Categories in a Parameter List
- After completing this module, students will be able to:
 - Define report data.
 - Use parameters and filters.
 - Use parameter lists.

Module 5: Using Report Models

The students will learn how to create a report model so that business users can create their own reports without using the full Report Designer development environment. Students will also learn how to use Report Builder to create a report from a report model.

- Lessons
 - Creating Report Models

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- Using Report Builder
- Lab : Using Report Models
 - Creating a Report Model
 - Using Report Builder to Create a Report
- After completing this module, students will be able to:
 - Create Report Models.
 - Use Report Builder.

Module 6: Publishing and Executing Reports

The students will learn the various options you can use to publish reports to the report server and execute them.

- Lessons
 - Publishing Reports
 - Executing Reports
 - Creating Cached Instances
 - Creating Snapshots and Report History
- Lab : Publishing and Executing Reports
 - Publishing Reports
 - Executing Reports
 - Configuring and Viewing a Cached Report
 - Configuring and Viewing a Snapshot Report

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MSBI (SSIS, SSAS, SSRS) Syllabus

- After completing this module, students will be able to:
 - Publish reports.
 - Execute reports.
 - Create cached instances.
 - Create snapshots and report history.

Module 7: Using Subscriptions to Distribute Reports

The students will learn how to implement subscriptions so that you can distribute reports either automatically by e-mail or by publishing reports to a shared folder.

- Lessons
 - Introduction to Report Subscriptions
 - Creating Report Subscriptions
 - Managing Report Subscriptions
- Lab : Using Subscriptions to Distribute Reports
 - Creating a Standard Subscription
 - Creating a Data-Driven Subscription
- After completing this module, students will be able to:
 - Describe report subscriptions.
 - Create report subscriptions.
 - Manage report subscriptions.

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MSBI (SSIS, SSAS, SSRS) Syllabus

Module 8: Administering Reporting Services

The students will learn how to administer the Reporting Services server, how to monitor and optimize the performance of the report server, how to maintain the Reporting Services databases, and how to keep the system secure.

➤ Lessons

- Reporting Server Administration
- Performance and Reliability Monitoring
- Administering Report Server Databases
- Security Administration
- Upgrading to Reporting Services 2008

➤ Lab : Administering Reporting Services

- Using Reporting Services Configuration Manager
- Securing a Reporting Services Site
- Securing Items

➤ After completing this module, students will be able to:

- Administer the reporting server.
- Monitor performance and reliability.
- Administer the Report Server databases.
- Administer security.
- Upgrade to Reporting Services 2008.

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MSBI (SSIS, SSAS, SSRS) Syllabus

Module 9: Programming Reporting Services

The students will learn how to query Reporting Services information programmatically and how to automate report management tasks. Students will also learn how to render reports without relying on Report Manager, and how to extend the feature set of a report server by creating custom code.

➤ Lessons

- Querying for Server Information Using a Web Service
- Automating Report Management
- Rendering Reports
- Creating Custom Code

➤ Lab : Programming Reporting Services

- Using URL Access to Display a Report
- Building a Reporting Services Web Service Client
- Using the Report Viewer Control

➤ After completing this module, students will be able to:

- Query server information using a Web service.
- Automate report management.
- Render reports.
- Create custom code.

Note: There will be practical sessions for every topic mentioned above in the syllabus.
