

## Designing BI Report Solutions with SQL Server 2012 Reporting Services and SharePoint 2010

5 Days (BI-RSDSN12-301-EN)

### Description

This course will teach students to apply industry design patterns and best practices to create business reports and reporting solutions based on years of field experience with the product in a variety of industries and business scenarios. Students will learn to avoid common pitfalls and to apply effective design techniques to meet business requirements. This course is focused on business intelligence solutions, dashboards and analytical reports deployed to an integrated SharePoint business portal environment.

SQL Server Reporting Services is the industry-standard reporting tool from Microsoft, available in the SQL Server product suite. It can be used to report on data from many different data sources and database platforms, for operational, business intelligence and analytical reporting. Many of the techniques and practices taught in this course can be applied to a variety of reporting styles and environments with and without SharePoint integration.

### Customizations & Options

For private classes, this course can be customized by omitting modules and adjusting the emphasis on different topics. In business environments where certain technologies, such as SharePoint and SQL Server Analysis Services, are not being used (or not yet being used), the modules related to these services can be omitted. Students will work in a lab and demonstration environment where these services are present but can be deemphasized. The course virtual machine environment includes report servers in both SharePoint integrated mode and in native (non-SharePoint integrated) mode so demonstrations can be performed in either configuration.

### Target Audience

This course is intended for business users and IT professionals who need to design business reports to support operational or analytical reporting needs. Report designers can leverage their skills using other reporting tools or start fresh with no prior report design experience. Less experienced business users should be prepared to keep pace with advanced users and to follow directions using common Windows menus, controls and dialogs.

IT professionals and developers who do not have prior experience with Reporting Services will find this course helpful for learning to design and manage reports that may be used in integrated applications and enterprise reporting solutions. Students with prior Reporting Services version experience will find this course useful for learning to use capabilities introduced in the new product version.

## Prerequisites

Students will learn fundamental query design and data manipulation and are not required to have these skills before attending this course. They must be proficient using Windows and business productivity software, common Windows dialogs and controls, and should be able to use Windows Explorer to manage files and navigate a folder structure. They should be proficient using Internet Explorer to navigate hyperlinks and Internet addresses. Students who are very proficient using Microsoft Windows, Word and Excel should be comfortable with this course. Advanced skills with Visual Studio and SQL Server are helpful but not required.

## Course Objectives

Upon completion of this course, the student will be able to:

- Define, articulate and document business report requirements
- Use Report Builder and SQL Server Data Tools to design reports and report solutions
- Create data sources and datasets to retrieve data from business data stores
- Use fundamental T-SQL and MDX queries to retrieve data
- Filter data using a query or dataset filter definition
- Design basic report styles including tables, lists, matrices and charts
- Group, sort and summarize data using report data regions
- Define report layout and formatting elements to present information
- Build dynamic drill-down and drill-through reports using report actions
- Use advanced report design techniques to present complex data
- Use parameters and expressions to create a dynamic reporting experience
- Design analytical reports based on semantic data models and OLAP cubes
- Apply industry standard design patterns and best practices
- Use shared data sources, shared datasets and report parts
- Design and build BI dashboards using KPI indicators, sparklines and gauges
- Use maps to visualize and analyse geographic and spatial data
- Deploy and manage reports to test, and production environments
- Manage report folders and document libraries
- Integrate reports into SharePoint document libraries
- Understand and articulate report management and security requirements

- Define and manage a self-service reporting solution using Report Builder
- Enable user data discovery and insights with PowerPivot, BI semantic tabular models and Power View
- Use subscriptions, snapshots and cached report instances to define business report solutions
- Enable business user solutions by planning a self-service reporting solution for users to design their own reports, simply, using report parts and shared objects

## Course Summary Outline

### Day 1

#### Module 01 – Report Solutions & Architecture

- SQL Server Reporting Services (SSRS) architecture at a high level
- Introduction to databases and semantic models
- SSRS in SharePoint

#### Module 02 – Basic Report Design

- Report design tools overview
- Report builder
  - Connecting to data sources
  - Basic report design structure
  - Using the report wizards

##### *Lab 02A: Using the Matrix Wizard to Design a Basic Report*

- Basic report formatting

##### *Lab 02B: Manually Designing a Matrix Report Using Report Builder*

- SQL Server Data Tools

##### *Lab 02C: Creating a SQL Server Data Tools Report Project*

#### Module 03 – Report Layout & Formatting

- Essential components: Data sources, datasets, and data regions
- Table design
- Groups and headers
- Formatting numeric measures
- Aggregates and totals

### Day 2

#### Module 04 – Designing Data Access

- Shared and embedded data sources
- Database objects
- T-SQL query basics
- Query grouping and aggregation

*Lab 04A: Understanding Query Design Essentials*

- Filtering and parameters

*Lab 04B: Using Parameters*

- Advanced parameterization

Module 05 – Chart Report Design

- Chart essentials
  - Series values and aggregation
  - Category and series groups
- Chart design environment
- Chart type criteria
- Chart object anatomy

*Lab 05: Creating Advanced Charts*

## Day 3

Module 06 – Groups and Totals

- Report body, headers, and footers
- Totals and subtotals

*Lab 06A: Using Headers, Footers, and Totals*

- Aggregate and specialized functions
- Aggregate scope
- Nested report items

*Lab 06B: Creating a Nested Gauge Report*

- Recursive group levels

*Lab 06C: Reporting on Recursive Relationships*

## Module 07 – Expressions and Custom Logic

- Using properties and expressions
- Introducing the Expression Builder
- Using expressions and parameters to customize report behavior
- Introducing custom Visual Basic functions

### *Lab 07A: Using Basic Expressions*

- Using advanced report programming

### *Lab 07B: Using Custom Code in a Report*

- Developing and using a custom assembly

### *Lab 07C: Using a Custom Assembly*

## Day 4

## Module 08 – Dynamic Reports and Actions

- Dynamic visibility and drill-down reports

### *Lab 08A: Creating Drill-Down Reports*

- Document maps and bookmarks
- Links and drill-through reports

### *Lab 08B: Creating Links and Drill-Through Reports*

- URL actions
- Subreports

### *Lab 08C: Federating Data with a Subreport*

- Conditional rendering
- Dynamic groups
- Column visibility

## Module 09 – Semantic Models and Analytical Data Sources

- Introduction to dimensional data modeling
- Microsoft Business Intelligence and the BI Semantic Model
- PowerPivot for Excel
- PowerPivot for SharePoint
- Tabular BI Semantic Models
- Migrating PowerPivot to a tabular model
- The SSDT tabular model designer

### *Lab 09: Using PowerPivot and Tabular Models for Reporting*

- Getting started with Power View
- Using tabular data sources in SSRS

## Module 10 – Multidimensional Reporting with SSAS and MDX

- Basic MDX report design
- Graphical MDX query designer
- Manual query modification
- Report design provisions
- MDX essentials

### *Lab 10A: Creating a Report with a Manually Written MDX*

- Dynamic parameter queries
- Dynamic management views (DMVs)

### *Lab 10B: Adding Parameters and Dynamic Query Logic*

## Day 5

## Module 11 – Map Report Design and Geospatial Reporting

- Map report basics
- Using the map wizard
- Working with spatial data
- Shape layers and point layers
- Color scales, callouts, and point labels
- Bing Maps layers
- Geocoding and geospatial queries
- Map design techniques and design patterns

### *Lab 11: Building a Multilayer Geographic Map Report*

## Module 12 – BI Dashboard Design

- Dashboard concepts
- The art of dashboard design – examples, patterns, and expert recommendations
- Using and reporting KPIs
- Gauges and bullet graphs
- Scorecards and indicator sets

### *Lab 12A: Designing a KPI Business Scorecard*

- Sparklines

### *Lab 12B: Building an Interactive Sparkline*

## Module 13 – Enabling Report Delivery and Self-Service Reporting

- Reporting in the Cloud
- Planning a self-service reporting solution
- Report content planning
- Organizing reports
- Report ownership
- Report execution options
- Automated delivery options
  - Subscriptions, alerting, and delivery options

### *Lab 13A: Configuring the Environment*

- Enabling self-service

### *Lab 13B: User Reporting Experience*