

# Applied Microsoft BI



The Microsoft Data Platform empowers BI pros to implement organizational BI solutions delivering a single version of the truth across the enterprise. A typical organizational solution includes a data warehouse/data mart, ETL processes to extract, transform, and load the data, and a semantic model to centralize business calculations.

## Syllabus

This four-day class is designed to help you become proficient with the Microsoft BI toolset and acquire the necessary skills to implement an organizational BI solution. You'll learn how to design a star schema, use SQL Server Integration Services to transform data, and implement a Tabular semantic model. Depending on the students' skillset, it can be customized, such as to reduce coverage of specific technologies, replace them with other topics of interest, such as Multidimensional instead of Tabular, or cover additional topics, such as Power BI or Reporting Services.

## Module 1: Introducing Microsoft Organizational BI

- Understanding Business Intelligence
- Understanding Microsoft Data Platform
- Understanding Classic BI Architecture
- Understanding SQL Server BI Services (Database Engine, SSIS, SSRS, SSAS)
- Lab 1: Interactive Reporting with Excel and Analysis Services
- Understanding SQL Server Management Studio (SSMS)
- Understanding SQL Server Data Tools
- Lab 2: Using SQL Server Management Studio

## Module 2: Data Warehousing Design Fundamentals

- Understanding data warehousing
- Understanding dimensional modeling
- Understanding star and snowflake schemas
- Lab 1: Comparing OLTP and OLAP databases
- Understanding dimensions
- Understanding fact tables
- Lab 2: Exploring dimensions and fact tables

## Module 3: Designing Dimension and Fact Tables

- Implementing dimensional models in four steps
- Understanding dimension keys
- Understanding slowly changing dimensions (SCD)
- Understanding profile dimensions
- Lab 1: Implementing dimensions
- Understanding fact table column types
- Understanding measure additivity
- Understanding types of fact table (transactional, snapshots)
- Understanding bus matrix
- Lab 2: Implementing fact tables

## Module 4: SSIS Fundamentals

- When to use SSIS?
- Understanding SSIS projects
- Understanding SSIS objects
- Lab 1: Working with SSIS projects
- Understanding control flows
- Understanding connection managers
- Lab 2: Working with connection managers
- Understanding control flow tasks
- Understanding precedence constraints
- Understanding containers
- Lab 3: Implementing control flow tasks

## Module 5: Implementing Data Flow

- Understanding the ETL pattern
- Understanding the Data Flow Task
- Understanding sources
- Understanding destinations
- Lab 1: Implementing data flows
- Understanding transformations
- Understanding data flow paths
- Lab 2: Transforming data

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## Module 6: SSIS Programming

Understanding expressions

Understanding variables

Understanding project and package parameters

Lab: Working with expressions

Understanding Script Task

Understanding Script Component

Debugging techniques

Lab: Using the Script Task

## Module 7: Applying the ELT Pattern

Understanding the ELT pattern

Comparing ETL and ELT

Loading dimensions

Lab 1: Loading dimensions with ELT

Merging fact tables

Lab 2: Loading fact tables with ELT

## Module 8: Deploying and Monitoring Packages

Understanding deployment options

Understanding SSIS Catalog

Lab 1: Deploying packages

Scheduling package execution

Monitoring package execution

Lab 2: Scheduling and monitoring package execution

## Module 9: Tabular Fundamentals

Understanding Microsoft BI Semantic Model

BISM architectural view and continuum

Feature comparison of BISM components

Lab 1: Upgrading from Power Pivot

Understanding design environment

Understanding deployment

Lab 2: Configuring design and deployment

## Module 10: Working with Data

Understanding data storage

Importing from relational databases

Lab 1: Importing from databases

Importing flat files

Importing from Excel

Importing from data feeds

Lab 2: Importing from other data sources

## Module 11: Enhancing the Model

Understanding column data types

Performing table and column operations

Lab 1: Working with columns

Understanding relationships

Understanding data refresh

Managing connections and import definitions

Lab 2: Working with relationships

Understanding end-user features

Lab 3: Implementing end-user features

## Module 12: DAX Fundamentals

Understanding Data Analysis Expressions

Understanding row and filter context

Understanding calculated columns

Lab 1: Implementing calculated columns

Understanding measures and measure functions

Implementing key performance indicators

Lab 2: Implementing measures and KPIs

Querying Tabular from external clients

Lab 3: Querying Tabular models

## Module 13: Tabular Storage and Processing

Understanding storage modes

Understanding partitions

Lab 1: Working with partitions

Understanding processing

Lab 2: Processing objects

Estimating and configuring memory  
Lab 3: Estimating and configuring memory

## Module 14: Implementing Tabular Security

Understanding roles  
Understanding row filters  
Lab 1: Implementing basic security  
Understanding dynamic data security  
Externalizing security policies  
Lab 2: Implementing dynamic data security

### Audience

BI professionals  
BI developers

### Prerequisites

Experience navigating the Microsoft Windows environment  
Experience in SQL Server database development

### Hardware and software requirements

Windows 7 or above  
Minimum of 4GB RAM (8GB recommended)  
SQL Server Developer Edition  
SQL Server Data Tools or Visual Studio 2012, 2013, or 2015 with SSDT-BI  
AdventureWorksDW and AdventureWorks databases installed  
*Detailed software setup instructions will be sent before the event.*

### Instructor



Teo Lachev is a consultant, author, and mentor, with a focus on Microsoft Business Intelligence. Through his Atlanta-based company “Prologika”, a Microsoft Gold Partner in Data Analytics, he designs and implements innovative solutions that unlock the power of data and bring tremendous value to his customers, ranging from small companies to Fortune 50 organizations. Teo has authored and co-authored several SQL Server BI books and he has been leading the Atlanta Microsoft Business Intelligence group since he founded it in 2010. Microsoft has recognized Teo's expertise and contributions to the technical community by awarding him the prestigious Microsoft Most Valuable Professional (MVP) award since 2004.