MS-PL300T00: MICROSOFT POWER BI DATA ANALYST

DURATION	LEVEL	TECHNOLOGY	DELIVERY METHOD	TRAINING CREDITS
3 Days	Intermediate	Power Platform	Instructor-led	NA

INTRODUCTION

This course will discuss the various methods and best practices that are in line with business and technical requirements for modelling, visualizing, and analyzing data with Power BI. The course will also show how to access and process data from a range of data sources including both relational and non-relational data. This course will also explore how to implement proper security standards and policies across the Power BI spectrum including datasets and groups. The course will also discuss how to manage and deploy reports and dashboards for sharing and content distribution. Finally, this course will show how to build paginated reports within the Power BI service and publish them to a workspace for inclusion within Power BI.

AUDIENCE PROFILE

The audience for this course is data professionals and business intelligence professionals who want to learn how to accurately perform data analysis using Power BI. This course is also targeted toward those individuals who develop reports that visualize data from the data platform technologies that exist on both in the cloud and on-premises.

PREREQUISITES

Successful Data Analysts start this role with experience of working with data in the cloud.
Specifically:

– Understanding core data concepts.
– Knowledge of working with relational data in the cloud.
– Knowledge of working with non-relational data in the cloud.
– Knowledge of data analysis and visualization concepts.

You can gain the prerequisites and a better understanding of working with data in Azure by completing Microsoft Azure Data Fundamentals before taking this course.

COURSE OBJECTIVES

After completing this course, students will be able to:

– Ingest, clean, and transform data
– Model data for performance and scalability
– Design and create reports for data analysis
– Apply and perform advanced report analytics
– Manage and share report assets
– Create paginated reports in Power BI

COURSE CONTENT

Module 1: Discover data analysis
In this module, you explore the different roles in data and learn the different tasks of a data analyst.
Lessons

– Introduction
– Overview of data analysis
– Roles in data
– Tasks of a data analyst
– Check your knowledge
– Summary

After completing this module, students will:

– Learn about the roles in data
– Learn about the tasks of a data analyst

Module 2: Get started building with Power BI
Learn about Power BI, the building blocks and flow of Power BI, and how to create compelling, interactive reports.
Lessons

– Introduction
– Use Power BI
– Building blocks of Power BI
– Tour and use the Power BI service

– Check your knowledge
– Summary

After completing this module, students will:

– How Power BI services and applications work together
– Explore how Power BI can make your business more efficient
– How to create compelling visuals and reports

Module 3: Create interactive reports using Copilot for Power BI

Copilot for Power BI uses Generative AI to simplify data visualization and create reports, making Power BI more insightful and accessible.

Lessons
- Introduction
- Prepare your data for use with Copilot for Power BI
- Use Copilot for Power BI to model your data
- Create reports with Copilot for Power BI
- Create summaries with Copilot for Power BI
- Knowledge check
- Summary

After completing this module, students will:
- Design semantic model
- Create visuals and reports
- Create summaries

Module 4: Get data in Power BI

You'll learn how to retrieve data from a variety of data sources, including Microsoft Excel, relational databases, and NoSQL data stores. You'll also learn how to improve performance while retrieving data.

Lessons
- Introduction
- Get data from files
- Get data from relational data sources
- Create dynamic reports with parameters
- Get data from a NoSQL database
- Get data from online services
- Select a storage mode
- Get data from Azure Analysis Services
- Fix performance issues
- Resolve data import errors
- Exercise - Prepare data in Power BI Desktop
- Check your knowledge
- Summary

After completing this module, students will:
- Identify and connect to a data source
- Get data from a relational database, like Microsoft SQL Server
- Get data from a file, like Microsoft Excel
- Get data from applications
- Get data from Azure Analysis Services
- Select a storage mode
- Fix performance issues
- Resolve data import errors

Module 5: Clean, Transform, and Load Data in Power BI

Power Query has an incredible number of features that are dedicated to helping you clean and prepare your data for analysis. You'll learn how to simplify a complicated model, change data types, rename objects, and pivot data. You'll also learn how to profile columns so that you know which columns have the valuable data that you're seeking for deeper analytics.

Lessons
- Introduction
- Shape the initial data
- Simplify the data structure
- Evaluate and change column data types
- Combine multiple tables into a single table
- Profile data in Power BI
- Use Advanced Editor to modify M code
- Exercise - Load data in Power BI Desktop
- Check your knowledge
- Summary

After completing this module, students will be able to:
- Resolve inconsistencies, unexpected or null values, and data quality issues.
- Apply user-friendly value replacements.
- Profile data so you can learn more about a specific column before using it.
- Evaluate and transform column data types.
- Apply data shape transformations to table structures.
- Combine queries.
- Apply user-friendly naming conventions to columns and queries.
- Edit M code in the Advanced Editor.

Module 6: Choose a Power BI model framework

Describe model frameworks, their benefits and limitations, and features to help optimize your Power BI data models.

Lessons
- Introduction
- Describe Power BI model fundamentals
- Determine when to develop an import model
- Determine when to develop a DirectQuery model
- Determine when to develop a composite model
- Choose a model framework
- Check your knowledge
- Summary

After completing this module, students will be able to:
- Describe Power BI model fundamentals
- Determine when to develop an import model
- Determine when to develop a DirectQuery model
- Determine when to develop a composite model
- Choose an appropriate Power BI model framework

Module 7: Describe Power BI Desktop models

In this module, you'll learn about the Power BI Desktop model structure, star schema design basics, analytics queries, and report visual configuration. This module provides a strong foundation on which you can learn to optimize model designs and add model calculations.

Lessons
- Introduction
- Star schema design
- Analytic queries
- Configure report visuals
- Check your knowledge
- Summary

After completing this module, students will be able to:
- Describe the structure of a Power BI Desktop model
- Explain star schema design basics
- Define the term analytic query and its phases
- Describe how fields can be used to configure a report visual, which then generates an analytic query

Module 8: Design a semantic model in Power BI

The process of creating a complicated semantic model in Power BI is straightforward. If your data is coming in from more than one transactional system, before you know it, you can have dozens of tables that you have to work with. Building a great semantic model is about simplifying the disarray. A star schema is one way to simplify a semantic model, and you learn about the terminology and implementation of them in this module. You will also learn about why choosing the correct data granularity is important for performance and usability of your Power BI reports. Finally, you learn about improving performance with your Power BI semantic models.

Lessons
- Introduction
- Work with tables
- Create a date table
- Work with dimensions
- Define data granularity
- Work with relationships and cardinality
- Resolve modeling challenges
- Exercise - Model data in Power BI Desktop
- Check your knowledge
- Summary

After completing this module, students will be able to:

- Create common date tables
- Configure many-to-many relationships
- Resolve circular relationships
- Design star schemas

Module 9: Write DAX formulas for Power BI Desktop models
In this module, you'll learn how to write DAX formulas to create calculated tables, calculated columns, and measures, which are different types of model calculations. Additionally, you'll learn how to write and format DAX formulas, which consist of expressions that use functions, operators, references to model objects, constants, and variables.
Lessons
- Introduction
- Write DAX formulas
- DAX data types
- Work with DAX functions
- Use DAX operators
- Use DAX variables
- Check your knowledge
- Summary
After completing this module, students will be able to:
- Describe the different DAX calculation types
- Write DAX formulas
- Describe DAX data types
- Work with DAX functions
- Use DAX operators
- Use DAX variables

Module 10: Add measures to Power BI Desktop models
In this module, you'll learn how to work with implicit and explicit measures. You'll start by creating simple measures, which summarize a single column or table. Then, you'll create more complex measures based on other measures in the model. Additionally, you'll learn about the similarities of, and differences between, a calculated column and a measure.
Lessons
- Introduction
- Create simple measures
- Create compound measures
- Create quick measures
- Compare calculated columns with measures
- Check your knowledge
- Exercise - Create DAX Calculations in Power BI Desktop
- Summary
After completing this module, students will be able to:
- Determine when to use implicit and explicit measures
- Create simple measures
- Create compound measures
- Create quick measures

- Describe similarities of, and differences between, a calculated column and a measure

Module 11: Add calculated tables and columns to Power BI Desktop models
By the end of this module, you'll be able to add calculated tables and calculated columns to your semantic model. You'll also be able to describe row context, which is used to evaluated calculated column formulas. Because it's possible to add columns to a table using Power Query, you'll also learn when it's best to create calculated columns instead of Power Query custom columns.
Lessons
- Introduction
- Create calculated columns
- Learn about row context
- Choose a technique to add a column
- Check your knowledge
- Summary
After completing this module, students will be able to:
- Create calculated tables
- Create calculated columns
- Identify row context
- Determine when to use a calculated column in place of a Power Query custom column
- Add a date table to your model by using DAX calculations

Module 12: Modify DAX filter context in Power BI Desktop models
By the end of this module, you'll be able to describe and work with filter context, which is used to evaluate measure formulas.
Lessons
- Introduction
- Modify filter context
- Use filter modifier functions
- Examine filter context
- Perform context transition
- Check your knowledge
- Summary
After completing this module, students will be able to
- Describe filter context.
- Use the CALCULATE function to modify filter context.
- Pass filters to the CALCULATE function.
- Pass filter modifiers to the CALCULATE function.
- Perform context transition.

Module 13: Use DAX time intelligence functions in Power BI Desktop models
By the end of this module, you'll learn the meaning of time intelligence and how to add time

intelligence DAX calculations to your model.
Lessons
- Introduction
- Use DAX time intelligence functions
- Additional time intelligence calculations
- Exercise - Create Advanced DAX Calculations in Power BI Desktop
- Check your knowledge
- Summary
After completing this module, students will be able to:
- Define time intelligence
- Use common DAX time intelligence functions
- Create useful intelligence calculations

Module 14: Optimize a model for performance in Power BI
Performance optimization, also known as performance tuning, involves making changes to the current state of the semantic model so that it runs more efficiently. Essentially, when your semantic model is optimized, it performs better.
Lessons
- Introduction to performance optimization
- Review performance of measures, relationships, and visuals
- Use variables to improve performance and troubleshooting
- Reduce cardinality
- Optimize DirectQuery models with table level storage
- Create and manage aggregations
- Check your knowledge
- Summary
After completing this module, students will be able to:
- Review the performance of measures, relationships, and visuals
- Use variables to improve performance and troubleshooting
- Improve performance by reducing cardinality levels
- Optimize DirectQuery models with table level storage
- Create and manage aggregations

Module 15: Scope report design requirements
Gathering appropriate inputs to scope your report design requirements involves identifying your audience, determining the suitable report types, and defining their interface and experience requirements. This module provides you with a strong foundation on

which to learn how to plan your report design requirements.
Lessons
– Introduction
– Identify the audience
– Determine report types
– Define user interface requirements
– Define user experience requirements
– Explore report designs
– Check your knowledge
– Summary

After completing this module, students will be able to:
– Determine business goals
– Identify your audience
– Determine report types
– Define user interface requirements
– Define user experience requirements

Module 16: Design Power BI reports

Because Power BI includes more than 30 core visuals, it can be challenging for a beginner to select the correct visual. This module will guide you through selecting the most appropriate visual type to meet your design and report layout requirements.
Lessons
– Introduction
– Design the analytical report layout
– Design visually appealing reports
– Report objects
– Select report visuals
– Select report visuals to suit the report layout
– Format and configure visualizations
– Work with key performance indicators
– Exercise - Design a report in Power BI desktop
– Check your knowledge
– Summary

After completing this module, students will be able to:
– Learn about the structure of a Power BI report
– Learn about report objects
– Select the appropriate visual type to use

Module 17: Configure Power BI report filters

Report filtering is a complex topic because many techniques are available for filtering a Microsoft Power BI report. However, with complexity comes control, allowing you to design reports that meet requirements and expectations. Some filtering techniques apply at design time, while others are relevant at report consumption time (in reading view). What matters is

that your report design allows report consumers to intuitively narrow down to the data points that interest them.
Lessons
– Introduction to designing reports for filtering
– Apply filters to the report structure
– Apply filters with slicers
– Design reports with advanced filtering techniques
– Consumption-time filtering
– Select report filter techniques
– Case study - Configure report filters based on feedback
– Check your knowledge
– Summary

After completing this module, students will be able to:
– Design reports for filtering
– Design reports with slicers
– Design reports by using advanced filtering techniques
– Apply consumption-time filtering
– Select appropriate report filtering techniques

Module 18: Enhance Power BI report designs for the user experience

The features and capabilities that are covered in this module will help you enhance your reports to make them more refined.
Lessons
– Introduction
– Design reports to show details
– Design reports to highlight values
– Design reports that behave like apps
– Work with bookmarks
– Design reports for navigation
– Work with visual headers
– Design reports with built-in assistance
– Tune report performance
– Optimize reports for mobile use
– Exercise - Enhance Power BI reports
– Check your knowledge
– Summary

After completing this module, students will be able to:
– Design reports to show details
– Design reports to highlight values
– Design reports that behave like apps
– Work with bookmarks
– Design reports for navigation
– Work with visual headers
– Design reports with built-in assistance
– Use specialized visuals

Module 19: Perform analytics in Power BI

You'll learn how to use Power BI to perform data analytical functions, how to identify outliers in your data, how to group data together, and how to bin data for analysis. You'll also learn how to perform time series analysis. Finally, you'll work with advanced analytic features of Power BI, such as Quick Insights, AI Insights, and the Analyse feature.
Lessons
– Introduction
– Explore statistical summary
– Identify outliers with Power BI visuals
– Group and bin data for analysis
– Apply clustering techniques
– Conduct time series analysis
– Use the Analyze feature
– Create what-if parameters
– Use specialized visuals
– Exercise - Perform Advanced Analytics with AI Visuals
– Check your knowledge
– Summary

After completing this module, students will be able to:
– Explore statistical summary
– Identify outliers with Power BI visuals
– Group and bin data for analysis
– Apply clustering techniques
– Conduct time series analysis
– Use the Analyze feature
– Use advanced analytics custom visuals
– Review Quick insights
– Apply AI Insights

Module 20: Create visual calculations in Power BI Desktop

Calculations in Power BI are necessary to enrich data analysis. Visual calculations simplify complex formulas, enhance performance, and reduce maintenance.
Lessons
– Introduction
– Understand visual calculations
– Create visual calculations
– Use parameters in visual calculations
– Exercise - Create visual calculations in Power BI Desktop
– Knowledge check
– Summary

After completing this module, students will be able to:
– Understand visual calculations and how they differ from measures.
– Create visual calculations in Power BI Desktop.
– Use parameters in visual calculations.

Module 21: Create and Manage Workspaces in Power BI

Learn how to navigate the Power BI service, create and manage workspaces and related items, and distribute reports to users.
Lessons
– Distribute a report or dashboard
– Monitor usage and performance
– Recommend a development life cycle strategy
– Troubleshoot data by viewing its lineage
– Configure data protection

After completing this module, students will be able to:
– Create and manage Power BI workspaces and items
– Distribute a report or dashboard
– Monitor usage and performance
– Recommend a development lifecycle strategy
– Troubleshoot data by viewing its lineage
– Configure data protection

Module 22: Manage semantic models in Power BI
With Microsoft Power BI, you can use a single semantic model to build many reports. Reduce your administrative overhead even more with scheduled semantic model refreshes and resolving connectivity errors.
Lessons
– Introduction
– Use a Power BI gateway to connect to on-premises data sources
– Configure a semantic model scheduled refresh
– Configure incremental refresh settings

– Manage and promote semantic models
– Troubleshoot service connectivity
– Boost performance with query caching (Premium)
– Check your knowledge
– Summary
After completing this module, students will be able to:
– Use a Power BI gateway to connect to on-premises data sources
– Configure a scheduled refresh for a semantic model
– Configure incremental refresh settings
– Manage and promote semantic models
– Troubleshoot service connectivity
– Boost performance with query caching (Premium)

Module 23: Create Dashboards in Power BI
Microsoft Power BI dashboards are different than Power BI reports. Dashboards allow report consumers to create a single artifact of directed data that is personalized just for them. Dashboards can be composed of pinned visuals that are taken from different reports. Where a Power BI report uses data from a single semantic model, a Power BI dashboard can contain visuals from different semantic models.
Lessons
– Introduction to dashboards
– Configure data alerts
– Explore data by asking questions
– Review Quick insights
– Add a dashboard theme

– Pin a live report page to a dashboard
– Configure a real-time dashboard
– Set mobile view
– Exercise - Create a Power BI dashboard
– Check your knowledge
– Summary
After completing this module, students will be able to:
– Set a mobile view
– Add a theme to the visuals in your dashboard
– Add real-time semantic model visuals to your dashboards
– Pin a live report page to a dashboard

Module 24: Implement row-level security
Row-level security (RLS) allows you to create a single or a set of reports that targets data for a specific user. In this module, you'll learn how to implement RLS by using either a static or dynamic method and how Microsoft Power BI simplifies testing RLS in Power BI Desktop and Power BI service.
Lessons
– Introduction
– Configure row-level security with the static method
– Configure row-level security with the dynamic method
– Exercise - Enforce row-level security in Power BI
– Check your knowledge
– Summary
After completing this module, students will be able to:
– Configure row-level security by using a static method.
– Configure row-level security by using a dynamic method.

ASSOCIATED CERTIFICATIONS & EXAM

This course will prepare delegates to write the Microsoft PL-300: Microsoft Power BI Data Analyst exam.