



Microsoft Power BI Data Analyst

Course PL-300T00: 3 days; Instructor-Led

Introduction

This course covers the various methods and best practices that are in line with business and technical requirements for modeling, visualizing, and analyzing data with Power BI. The course will show how to access and process data from a range of data sources including both relational and non-relational sources. Finally, this course will also discuss how to manage and deploy reports and dashboards for sharing and content distribution.

Audience

The audience for this course are 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.

Job role: Data Analyst

Preparation for exam: [PL-300](#)

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 Outline

Module 1: Discover data analysis

Would you like to explore the journey of a data analyst and learn how a data analyst tells a story with data? In this module, you will explore the different roles in data and learn the different tasks of a data analyst.

In this module, you will:

- Learn about the roles in data.
- Learn about the tasks of a data analyst.

Lessons

- Introduction
- Overview of data analysis
- Roles in data
- Tasks of a data analyst

Module 2: Get started building with Power BI

Learn what Power BI is, including its building blocks and how they work together. This module helps prepare you for Exam PL-100: Microsoft Power Platform App Maker.

In this module, you will:

- Learn how Power BI services and applications work together.
- Explore how Power BI can make your business more efficient.

- Learn how to create compelling visuals and reports.

Lessons

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

Module 3: Get data in Power BI

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

In this module, you 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

Lessons

- Introduction
- Get data from files
- Get data from relational data sources
- 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

Module 4: Clean, transform, and load data in Power BI

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

In this module, you will:

- 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.

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

Module 5: Design a data model in Power BI

The process of creating a complicated data 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 data model is about simplifying the disarray. A star schema is one way to simplify a data 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 data models.

In this module, you will:

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

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

Module 6: Introduction to creating measures using DAX in Power BI

Data Analysis Expressions (DAX) is a programming language that is used throughout Microsoft Power BI for creating calculated columns, measures, and custom tables. It is a collection of functions, operators, and constants that can be used in a formula, or expression, to calculate and return one or more values. You can use DAX to solve a number of calculations and data analysis problems, which can help you create new information from data that is already in your model.

In this module, you will:

- Build quick measures.
- Create calculated columns.
- Use DAX to build measures.
- Discover how context affects DAX measures.
- Use the CALCULATE function to manipulate filters.
- Implement time intelligence by using DAX.

Lessons

- Introduction to DAX
- Understand context
- Use the Calculate function
- Use relationships effectively
- Create semi-additive measures
- Exercise - Introduction to DAX in Power BI Desktop
- Work with time intelligence
- Exercise - Time intelligence and measures in DAX

Module 7: Optimize a model for performance in Power BI

Performance optimization, also known as performance tuning, involves making changes to the current state of the data model so that it runs more efficiently. Essentially, when your data model is optimized, it performs better.

In this module, you will:

- 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.

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

Module 8: Work with Power BI visuals

Learn how to choose from the exceptional visuals that Power BI makes available to you. Formatting visuals will direct the user's attention to exactly where you want it, while helping to make the visual easier to read and interpret. You'll also learn about how to use key performance indicators (KPIs).

In this module, you will:

- Add visualization items to reports.
- Choose an effective visualization.
- Format and configure visualizations.
- Import a custom visual.
- Add an R or Python visual.

Lessons

- Introduction to work with Power BI visuals
- Add visualization items to reports
- Choose an effective visualization
- Format and configure visualizations
- Import a custom visual
- Add an R or Python visual
- Work with key performance indicators
- Exercise - Design a report in Power BI desktop

Module 9: Create a data-driven story with Power BI reports

Power BI helps you create vibrant, highly useful reports that form a cohesive, data-driven story. You'll learn how to use buttons, bookmarks, and other navigation techniques. Additionally, you'll learn how to integrate Power BI reports with other applications. Power BI visuals can interact with each other, letting the user see exactly which data is appealing to them. You'll also explore Power BI report themes to create a unified reporting experience across all reports.

In this module, you will:

- Design a report layout.
- Add buttons, bookmarks, and selections.
- Design report navigation.
- Use basic interactions.
- Use advanced interactions and drillthrough.
- Configure conditional formatting.
- Apply slicing, filtering, and sorting.
- Publish and export reports.
- Comment on reports.
- Use Performance analyzer to tune reports.
- Optimize reports for mobile use.

Lessons

- Introduction to create a data-driven story with Power BI reports
- Design a report layout
- Add buttons, bookmarks, and selections
- Design report navigation
- Use basic interactions
- Use advanced interactions and drill through
- Configure conditional formatting
- Apply slicing, filtering, and sorting
- Publish and export reports
- Comment on reports
- Tune report performance
- Optimize reports for mobile use
- Exercise - Enhance Power BI reports with slicers, interaction, and formatting

Module 10: 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 dataset, a Power BI dashboard can contain visuals from different datasets.

In this module, you will:

- Set a mobile view.
- Add a theme to the visuals in your dashboard.
- Configure data classification.
- Add real-time dataset visuals to your dashboards.
- Pin a live report page to a dashboard.

Lessons

- Introduction to dashboards
- Configure data alerts
- Explore data by asking questions
- Add a dashboard theme
- Pin a live report page to a dashboard
- Configure a real-time dashboard
- Configure data classification
- Set mobile view
- Exercise - Create a Power BI dashboard

Module 11: Perform analytics in Power BI

You will 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 will also learn how to perform time series analysis. Finally, you will work with advanced analytic features of Power BI, such as Quick Insights, AI Insights, and the Analyze feature.

In this module, you will:

- 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.

Lessons

- Introduction to analytics

- 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 12: Work with AI visuals in Power BI

This module describes the AI capabilities of Power BI.

In this module, you will:

- Use the Q&A visual.
- Find important factors with the Key influencers visual.
- Use the Decomposition Tree visual to break down a measure.

Lessons

- Introduction to working with AI visuals
- Use the Q&A visual
- Find important factors with the Key influencers visual
- Use the Decomposition Tree visual to break down a measure
- Exercise - Analyze data with AI visuals

Module 13: Create and manage workspaces in Power BI

This module explains how you can share reports and datasets with your users and how to create a deployment strategy that makes sense for you and your organization. Furthermore, you'll learn about data lineage in Microsoft Power BI.

In this module, you will:

- Distribute a report or dashboard.
- Monitor usage and performance.
- Recommend a development life cycle strategy.
- Troubleshoot data by viewing its lineage.
- Configure data protection.

Lessons

- Introduction
- Distribute a report or dashboard
- Monitor usage and performance
- Recommend a development life cycle strategy
- Troubleshoot data by viewing its lineage
- Configure data protection

Module 14: Manage datasets in Power BI

With Microsoft Power BI, you can build multiple reports from a single dataset, meaning that if you change the dataset, all reports will be updated with that change. Additionally, you can clean and prep data once rather than repeatedly for each report.

In this module, you will:

- Create dynamic reports with parameters.
- Create what-if parameters.
- Use a Power BI gateway to connect to on-premises data sources.
- Configure a scheduled refresh for a dataset.
- Configure incremental refresh settings.

- Manage and promote datasets.
- Troubleshoot service connectivity.
- Boost performance with query caching (Premium).

Lessons

- Introduction
- Create dynamic reports with parameters
- Create what-if parameters
- Use a Power BI gateway to connect to on-premises data sources
- Configure a dataset scheduled refresh
- Configure incremental refresh settings
- Manage and promote datasets
- Troubleshoot service connectivity
- Boost performance with query caching (Premium)

Module 15: 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 will 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.

In this module, you will:

- Configure row-level security by using a static method.
- Configure row-level security by using a dynamic method.

Lessons

- Introduction
- Configure row-level security with the static method
- Configure row-level security with the dynamic method