



Designing and Implementing Enterprise-Scale Analytics Solutions Using Microsoft Azure and Microsoft Power BI (DP-500T00)

COURSE OVERVIEW

Students will build on existing analytics experience and will learn to implement and manage a data analytics environment, query and transform data, implement and manage data models, and explore and visualize data. In this course, students will use Microsoft Purview, Azure Synapse Analytics, and Power BI to build analytics solutions.

WHO WILL BENEFIT FROM THIS COURSE?

Candidates for this course should have subject matter expertise in designing, creating, and deploying enterprise-scale data analytics solutions. Specifically, candidates should have advanced Power BI skills, including managing data repositories and data processing in the cloud and on-premises, along with using Power Query and Data Analysis Expressions (DAX). They should also be proficient in consuming data from Azure Synapse Analytics and should have experience querying relational databases, analyzing data by using Transact-SQL (T-SQL), and visualizing data.

PREREQUISITES

Before attending this course, it is recommended that students have:

- A foundational knowledge of core data concepts and how they're implemented using Azure data services. For more information see Azure Data Fundamentals.
- Experience designing and building scalable data models, cleaning and transforming data, and enabling advanced analytic capabilities that provide meaningful business value using Microsoft Power BI. For more information see Power BI Data Analyst.

COURSE OBJECTIVES

Students will learn to:

- Explore Azure data services for modern analytics
- Understand concepts of data analytics
- Explore data analytics at scale
- Introduction to Microsoft Purview
- Discover trusted data using Microsoft Purview
- Catalog data artifacts by using Microsoft Purview
- Manage Power BI assets by using Microsoft Purview
- Integrate Microsoft Purview and Azure Synapse Analytics
- Introduction to Azure Synapse Analytics
- Use Azure Synapse serverless SQL pool to query files in a data lake
- Analyze data with Apache Spark in Azure Synapse Analytics



- Analyze data in a relational data warehouse
- Choose a Power BI model framework
- Understand scalability in Power BI
- Create and manage scalable Power BI dataflows
- Create Power BI model relationships
- Use DAX time intelligence functions in Power BI Desktop models
- Create calculation groups
- Enforce Power BI model security
- Use tools to optimize Power BI performance
- Understand advanced data visualization concepts
- Monitor data in real-time with Power BI
- Create paginated reports
- Provide governance in a Power BI environment
- Facilitate collaboration and sharing in Power BI
- Monitor and audit usage
- Provision Premium capacity in Power BI
- Establish a data access infrastructure in Power BI
- Broaden the reach of Power BI
- Automate Power BI administration
- Build reports using Power BI within Azure Synapse Analytics
- Design a Power BI application lifecycle management strategy
- Create and manage a Power BI deployment pipeline
- Create and manage Power BI assets

COURSE OUTLINE

Module 1: Explore Azure data services for modern analytics

- Describe the Azure data ecosystem for analytics

Module 2: Understand concepts of data analytics

- Describe types of data analytics
- Understand the data analytics process

Module 3: Explore data analytics at scale

- Explore data job roles in analytics
- Understand tools for scaling analytics solutions

Module 4: Introduction to Microsoft Purview

- Evaluate whether Microsoft Purview is appropriate for data discovery and governance needs.
- Describe how the features of Microsoft Purview work to provide data discovery and governance.

Module 5: Discover trusted data using Microsoft Purview

- Browse, search, and manage data catalog assets.
- Use data catalog assets with Power BI.
- Use Microsoft Purview in Azure Synapse



Module 6: Catalog data artifacts by using Microsoft Purview

- Describe asset classification in Microsoft Purview.

Module 7: Manage Power BI assets by using Microsoft Purview

- Register and scan a Power BI tenant.
- Use the search and browse functions to find data assets.
- Describe the schema details and data lineage tracing of Power BI data assets.

Module 8: Integrate Microsoft Purview and Azure Synapse Analytics

- Catalog Azure Synapse Analytics database assets in Microsoft Purview.
- Configure Microsoft Purview integration in Azure Synapse Analytics.
- Search the Microsoft Purview catalog from Synapse Studio.
- Track data lineage in Azure Synapse Analytics pipelines activities.

Module 9: Introduction to Azure Synapse Analytics

- Identify the business problems that Azure Synapse Analytics addresses.
- Describe core capabilities of Azure Synapse Analytics.
- Determine when to use Azure Synapse Analytics.

Module 10: Use Azure Synapse serverless SQL pool to query files in a data lake

- Identify capabilities and use cases for serverless SQL pools in Azure Synapse Analytics
- Query CSV, JSON, and Parquet files using a serverless SQL pool
- Create external database objects in a serverless SQL pool

Module 11: Analyze data with Apache Spark in Azure Synapse Analytics

- Identify core features and capabilities of Apache Spark.
- Configure a Spark pool in Azure Synapse Analytics.
- Run code to load, analyze, and visualize data in a Spark notebook.

Module 12: Analyze data in a relational data warehouse

- Design a schema for a relational data warehouse.
- Create fact, dimension, and staging tables.
- Use SQL to load data into data warehouse tables.
- Use SQL to query relational data warehouse tables.

Module 13: Choose a Power BI model framework

- 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 14: Understand scalability in Power BI

- Describe the importance of building scalable data models
- Implement Power BI data modeling best practices
- Use the Power BI large dataset storage format

Module 15: Create and manage scalable Power BI dataflows

- Describe Power BI dataflows and use cases.
- Describe best practices for implementing Power BI dataflows.
- Create and consume Power BI dataflows.



Module 16: Create Power BI model relationships

- Understand how model relationships work.
- Set up relationships.
- Use DAX relationship functions.
- Understand relationship evaluation.

Module 17: Use DAX time intelligence functions in Power BI Desktop models

- Define time intelligence.
- Use common DAX time intelligence functions.
- Create useful intelligence calculations.

Module 18: Create calculation groups

- Explore how calculation groups work.
- Maintain calculation groups in a model.
- Use calculation groups in a Power BI report.

Module 19: Enforce Power BI model security

- Restrict access to Power BI model data with RLS.
- Restrict access to Power BI model objects with OLS.
- Apply good development practices to enforce Power BI model security.

Module 20: Use tools to optimize Power BI performance

- Optimize queries using performance analyzer.
- Troubleshoot DAX performance using DAX Studio.
- Optimize a data model using Tabular Editor.

Module 21: Understand advanced data visualization concepts

- Create and import a custom report theme.
- Create custom visuals with R or Python.
- Enable personalized visuals in a report.
- Review report performance using Performance Analyzer.
- Design and configure Power BI reports for accessibility.

Module 22: Monitor data in real-time with Power BI

- Describe Power BI real-time analytics.
- Set up automatic page refresh.
- Create real-time dashboards.
- Set up auto-refresh paginated reports.

Module 23: Create paginated reports

- Get data.
- Create a paginated report.
- Work with charts and tables on the report.
- Publish the report.

Module 24: Provide governance in a Power BI environment

- Define the key components of an effective BI governance model
- Describe the key elements associated with data governance
- Configure, deploy, and manage elements of a BI governance strategy
- Set up BI help and support settings



Module 25: Facilitate collaboration and sharing in Power BI

- Understand the differences between My workspace, workspaces, and apps
- Describe new workspace capabilities and how they improve the user experience
- Anticipate migration impact to Power BI users
- Share, publish to the web, embed links, and secure Power BI reports, dashboards, and content

Module 26: Monitor and audit usage

- Discover what usage metrics are available through the Power BI admin portal
- Optimize use of usage metrics for dashboards and reports
- Distinguish between audit logs and the activity logs

Module 27: Provision Premium capacity in Power BI

- Describe the difference between Power BI Pro and Power BI Premium
- Define dataset eviction
- Explain how Power BI manages memory resources
- List three external tools you can use with Power BI Premium.

Module 28: Establish a data access infrastructure in Power BI

- Understand the difference between gateways, the various connectivity modes, and data refresh methods.
- Describe the gateway network requirements, where to place the gateway in your network, and how to use clustering to ensure high availability.
- Scale, monitor, and manage gateway performance and users.

Module 29: Broaden the reach of Power BI

- Describe the various embedding scenarios that allow you to broaden the reach of Power BI
- Understand the options for developers to customize Power BI solutions
- Learn to provision and optimize Power BI embedded capacity and create and deploy dataflows
- Build custom Power BI solutions template apps

Module 30: Automate Power BI administration

- Use REST APIs to automate common Power BI admin tasks
- Apply Power BI Cmdlets for Windows PowerShell and PowerShell core
- Use Power BI Cmdlets
- Automate common Power BI admin tasks with scripting

Module 31: Build reports using Power BI within Azure Synapse Analytics

- Describe the Power BI and Synapse workspace integration
- Understand Power BI data sources
- Describe optimization options
- Visualize data with serverless SQL pools

Module 32: Design a Power BI application lifecycle management strategy

- Outline the application lifecycle process.
- Choose a source control strategy.
- Design a deployment strategy.



Module 33: Create and manage a Power BI deployment pipeline

- Articulate the benefits of deployment pipelines
- Create a deployment pipeline using Premium workspaces
- Assign and deploy content to pipeline stages
- Describe the purpose of deployment rules
- Deploy content from one pipeline stage to another

Module 34: Create and manage Power BI assets

- Create specialized datasets.
- Create live and DirectQuery connections.
- Use Power BI service lineage view.
- Use XMLA endpoint to connect datasets.

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