

**Data Engineering on Microsoft Azure (DP-203)**

**Course Number:** MOC-DP-203  
**Duration:** 4 days

**Overview**

This Microsoft official DP-203 course, Data Engineering on Microsoft Azure, teaches attendees the patterns and practices of real-time analytical solutions using Azure. Participants learn how to interactively explore data stored in files in a data lake, transform data, monitor and analyze the performance of analytical systems, and much more. This course prepares students for the [DP-203 exam](https://docs.microsoft.com/en-us/learn/certifications/exams/DP-203) for which every attendee receives a voucher.

**Prerequisites**

All students must have knowledge of cloud computing, core data concepts, and professional experience with data solutions. Attendees should have taken [AZ-900: Azure Fundamentals](file:////training/microsoft-azure-fundamentals) and [DP-900: Microsoft Azure Data Fundamentals](file:////training/microsoft-azure-data-fundamentals), or have equivalent experience.

**Materials**

All Microsoft training students receive Microsoft official courseware.

For all Microsoft Official Courses taught in their entirety that have a corresponding certification exam, an exam voucher is included for each participant.

**Software Needed on Each Student PC**

Attendees will not need to install any software on their computers for this class. The class will be conducted in a remote environment that Accelebrate will provide; students will only need a local computer with a web browser and a stable Internet connection. Any recent version of Microsoft Edge, Mozilla Firefox, or Google Chrome will work well.

**Objectives**

* Explore Azure Synapse Analytics
* Describe key concepts of an Azure Databricks solution
* Create an Azure Storage Account by using the portal
* Get started with Azure Stream Analytics
* Query files using a serverless SQL pool
* Analyze data in a lake database
* Set up security when using Azure Synapse serverless SQL pools
* Use Spark in Azure Databricks
* Use Delta Lake in Azure Databricks
* Analyze data with Spark
* Integrate SQL and Apache Spark pools in Azure Synapse Analytics
* Implement workload management
* Ingest data between various data stores using Azure Data Factory
* Examine Azure Data Factory and the core components that enable large-scale data ingestion solutions in the cloud
* Perform common data transformation and cleansing activities within Azure Data Factory without using code
* Integrate a Notebook within Azure Synapse Pipelines
* Understand how hybrid transactional/analytical processing (HTAP) can perform operational analytics with Azure Synapse Analytics
* Configure an Azure Cosmos DB Account to use Azure Synapse Link
* Approach and implement security to protect your data with Azure Synapse Analytics
* Store secrets in Azure Key Vault
* Enable Microsoft Defender for SQL and Data Classification
* Connect sending and receiving applications with Event Hubs to handle extremely high loads without losing data

**Outline**

* Introduction to Azure Synapse Analytics
  + What is Azure Synapse Analytics
  + How Azure Synapse Analytics works
  + When to use Azure Synapse Analytics
  + Explore Azure Synapse Analytics
* Explore Azure Databricks
  + Get started with Azure Databricks
  + Identify Azure Databricks workloads
  + Understand key concepts
  + Explore Azure Databricks
* Introduction to Azure Data Lake Storage
  + Understand Azure Data Lake Storage Gen
  + Create an Azure Storage Account by using the portal
  + Compare Azure Data Lake Store to Azure Blob storage
  + Understand the stages for processing big data by using Azure Data Lake Store
  + Examine uses for Azure Data Lake Storage Gen
* Get started with Azure Stream Analytics
  + Understand data streams
  + Understand event processing
  + Explore Azure Stream Analytics
* Use Azure Synapse Serverless SQL Pool to Query Files in a Data Lake
  + Understand Azure Synapse serverless SQL pool capabilities and use cases
  + Query files using a serverless SQL pool
  + Create external database objects
  + Query files using a serverless SQL pool
* Create a Lake Database in Azure Synapse Analytics
  + Understand lake database concepts
  + Explore database templates
  + Create a lake database
  + Use a lake database
  + Analyze data in a lake database
* Secure Data and Manage users in Azure Synapse Serverless SQL Pools
  + Choose an authentication method in Azure Synapse serverless SQL pools3 min
  + Manage users in Azure Synapse serverless SQL pools3 min
  + Manage user permissions in Azure Synapse serverless SQL pools
* Use Apache Spark in Azure Databricks
  + Get to know Spark
  + Create a Spark cluster
  + Use Spark in notebooks
  + Use Spark to work with data files
  + Visualize data
  + Use Spark in Azure Databricks
* Use Delta Lake in Azure Databricks
  + Get Started with Delta Lake
  + Create Delta Lake tables
  + Create and query catalog tables
  + Use Delta Lake for streaming data
  + Use Delta Lake in Azure Databricks
* Analyze Data with Apache Spark in Azure Synapse Analytics
  + Get to know Apache Spark
  + Use Spark in Azure Synapse Analytics
  + Analyze data with Spark
  + Visualize data with Spark
  + Analyze data with Spark
* Integrate SQL and Apache Spark Pools in Azure Synapse Analytics
  + Describe the integration methods between SQL and spark pools in Azure Synapse Analytics
  + Understand the use-cases for SQL and spark pools integration
  + Authenticate in Azure Synapse Analytics
  + Transfer data between SQL and spark pool in Azure Synapse Analytics
  + Authenticate between spark and SQL pool in Azure Synapse Analytics
  + Integrate SQL and spark pools in Azure Synapse Analytics
  + Externalize the use of spark pools within Azure Synapse Workspace
  + Transfer data outside the synapse workspace using the PySpark connector
* Use Data Loading Best Practices in Azure Synapse Analytics
  + Understand data load design goals
  + Explain load methods into Azure Synapse Analytics
  + Manage source data files
  + Manage singleton updates
  + Set up dedicated data load accounts
  + Implement workload management
  + Simplify ingestion with the Copy Activity
* Petabyte-Scale Ingestion with Azure Data Factory or Azure Synapse Pipeline
  + List the data factory ingestion methods
  + Describe data factory connectors
  + Use the data factory copy activity
  + Manage the self-hosted integration runtime
  + Set up the Azure integration runtime
* Integrate Data with Azure Data Factory or Azure Synapse Pipeline
  + Understand Azure Data Factory
  + Describe data integration patterns
  + Explain the data factory process
  + Understand Azure Data Factory components
  + Azure Data Factory security
  + Set up Azure Data Factory
  + Create linked services
  + Create datasets
  + Create data factory activities and pipelines
  + Manage integration runtimes
* Perform Code-Free Transformation at Scale with Azure Data Factory or Azure Synapse Pipeline
  + Explain Azure Data Factory transformation methods
  + Describe Azure Data Factory transformation types
  + Author an Azure Data Factory mapping data flow
  + Debug mapping data flow
  + Use Azure Data Factory wrangling data
  + Use compute transformations within Azure Data Factory
  + Integrate SQL server integration services packages within Azure Data Factory
* Orchestrate Data Movement and Transformation in Azure Data Factory or Azure Synapse Pipeline
  + Understand data factory control flow
  + Work with data factory pipelines
  + Debug data factory pipelines
  + Add parameters to data factory components
  + Integrate a Notebook within Azure Synapse Pipelines
  + Execute data factory packages
* Plan Hybrid Transactional and Analytical Processing using Azure Synapse Analytics
  + Understand hybrid transactional and analytical processing patterns
  + Describe Azure Synapse Link
* Implement Azure Synapse Link with Azure Cosmos DB
  + Enable Cosmos DB account to use Azure Synapse Link
  + Create an analytical store enabled container
  + Create a linked service for Cosmos DB
  + Query Cosmos DB data with Spark
  + Query Cosmos DB with Synapse SQL
  + Implement Azure Synapse Link for Cosmos DB
* Secure a Data Warehouse in Azure Synapse Analytics
  + Understand network security options for Azure Synapse Analytics
  + Configure Conditional Access
  + Configure authentication
  + Manage authorization through column and row-level security
  + Manage authorization through column and row level security
  + Manage sensitive data with Dynamic Data Masking
  + Implement encryption in Azure Synapse Analytics
* Configure and Manage Secrets in Azure Key Vault
  + Guidelines for using Azure Key Vault
  + Manage access to secrets, certificates, and keys
  + Store secrets in Azure Key Vault
  + Manage certificates
* Implement Compliance Controls for Sensitive Data
  + Explore data classification
  + Explore server and database audit
  + Implement Dynamic Data Masking
  + Implement Row Level Security
  + Understand Microsoft Defender for SQL
  + Explore Azure SQL Database Ledger
  + Implement Azure Purview
  + Enable Microsoft Defender for SQL and Data Classification
* Enable Reliable Messaging for Big Data Applications using Azure Event Hubs
  + Create an Event Hub using the Azure CLI
  + Use the Azure CLI to Create an Event Hub
  + Configure applications to send or receive messages through an Event Hub
  + Configure applications to send or receive messages through an Event Hub
  + Evaluate the performance of the deployed Event Hub using the Azure portal
  + Evaluate the performance of the deployed Event Hub using the Azure portal
* Conclusion