



## Microsoft Azure Data Fundamentals

### Course DP-900T00: 1 day; Instructor-Led

#### Introduction

In this course, students will gain foundational knowledge of core data concepts and related Microsoft Azure data services. Students will learn about core data concepts such as relational, non-relational, big data, and analytics, and build their foundational knowledge of cloud data services within Microsoft Azure. Students will explore fundamental relational data concepts and relational database services in Azure. They will explore Azure storage for non-relational data and the fundamentals of Azure Cosmos DB. Students will learn about large-scale data warehousing, real-time analytics, and data visualization.

#### Audience

The audience for this course is individuals who want to learn the fundamentals of database concepts in a cloud environment, get basic skilling in cloud data services, and build their foundational knowledge of cloud data services within Microsoft Azure.

**Job role:** Data Engineer

**Preparation for exam:** [DP-900](#)

#### Prerequisites

Prerequisite certification is not required before taking this course. Successful Azure Data Fundamentals students start with some basic awareness of computing and Internet concepts, and an interest in extracting insights from data.

Specifically:

- Experience using a web browser, such as Microsoft Edge.
- Familiarity with basic data-related concepts, such as working with tables of data in a spreadsheet and visualizing data using charts.
- A willingness to learn through hands-on exploration.

#### Course Outline

##### Module 1: Explore core data concepts

Data powers the digital transformation that is sweeping across organizations and society in general. But what is "data", and how is it represented and used?

In this module, you will:

- Identify common data formats
- Describe options for storing data in files
- Describe options for storing data in databases
- Describe characteristics of transactional data processing solutions
- Describe characteristics of analytical data processing solutions

##### Lessons

- Introduction
- Identify data formats
- Explore file storage
- Explore databases
- Explore transactional data processing
- Explore analytical data processing

**Module 2: Explore data roles and services**

Data professionals perform distinct roles in building and managing software solutions, and work with multiple technologies and services to do so.

In this module, you will:

- Identify common data professional roles
- Identify common cloud services used by data professionals

**Lessons**

- Introduction
- Explore job roles in the world of data
- Identify data services

**Module 3: Explore fundamental relational data concepts**

Relational database systems are a common way to store and manage transactional and analytical data in organizations of any size around the world.

In this module, you will:

- Identify characteristics of relational data
- Define normalization
- Identify types of SQL statement
- Identify common relational database objects

**Lessons**

- Introduction
- Understand relational data
- Understand normalization
- Explore SQL
- Describe database objects

**Module 4: Explore relational database services in Azure**

Microsoft Azure provides multiple services for relational databases. You can choose the relational database management system that's best for your needs, and host relational data in the cloud.

In this module, you will:

- Identify options for Azure SQL services
- Identify options for open-source databases in Azure
- Provision a database service on Azure

**Lessons**

- Introduction
- Describe Azure SQL services and capabilities
- Describe Azure services for open-source databases
- Exercise: Explore Azure relational database services

**Module 5: Explore Azure Storage for non-relational data**

Azure Storage is a core service in Microsoft Azure that is commonly used to store non-relational data.

In this module, you will:

- Describe features and capabilities of Azure blob storage
- Describe features and capabilities of Azure Data Lake Gen2
- Describe features and capabilities of Azure file storage
- Describe features and capabilities of Azure table storage
- Provision and use an Azure Storage account

**Lessons**

- Introduction
- Explore Azure blob storage
- Explore Azure DataLake Storage Gen2
- Explore Azure Files
- Explore Azure Tables
- Exercise: Explore Azure Storage

**Module 6: Explore fundamentals of Azure Cosmos DB**

Azure Cosmos DB provides a highly scalable store for non-relational data.

In this module, you will:

- Describe key features and capabilities of Azure Cosmos DB
- Identify the APIs supported in Azure Cosmos DB
- Provision and use an Azure Cosmos DB instance

**Lessons**

- Introduction
- Describe Azure Cosmos DB
- Identify Azure Cosmos DB APIs
- Exercise: Explore Azure Cosmos DB

**Module 7: Explore fundamentals of large-scale data warehousing**

Organizations use modern data warehousing to build large scale data analytics solutions that generate insights and drive success. Microsoft Azure includes multiple technologies that you can combine to build a modern data warehousing solution.

In this module, you will:

- Identify common elements of a modern data warehousing solution
- Describe key features for data ingestion pipelines
- Identify common types of analytical data store and related Azure services
- Provision Azure Synapse Analytics and use it to ingest, process, and query data

**Lessons**

- Introduction
- Describe data warehousing architecture
- Explore data ingestion pipelines
- Explore analytical data stores
- Exercise: Explore data analytics in Azure with Azure Synapse Analytics

**Module 8: Explore fundamentals of real-time analytics**

Learn about the basics of stream processing, and the services in Microsoft Azure that you can use to implement real-time analytics solutions.

In this module, you will:

- Compare batch and stream processing
- Describe common elements of streaming data solutions
- Describe features and capabilities of Azure Stream Analytics
- Describe features and capabilities of Spark Structured Streaming on Azure
- Describe features and capabilities of Azure Synapse Data Explorer

**Lessons**

- Introduction
- Understand batch and stream processing
- Explore common elements of stream processing architecture
- Explore Azure Stream Analytics

- Exercise: Explore Azure Stream Analytics
- Explore Apache Spark on Microsoft Azure
- Exercise: Explore Spark Streaming in Azure Synapse Analytics
- Explore Azure Data Explorer
- Exercise: Explore Azure Synapse Data Explorer

### **Module 9: Explore fundamentals of data visualization**

Learn the fundamental principles of analytical data modeling and data visualization, using Microsoft Power BI as a platform to explore these principles in action.

In this module, you will:

- Describe a high-level process for creating reporting solutions with Microsoft Power BI
- Describe core principles of analytical data modeling
- Identify common types of data visualization and their uses
- Create an interactive report with Power BI Desktop

### **Lessons**

- Introduction
- Describe Power BI tools and workflow
- Describe core concepts of data modeling
- Describe considerations for data visualization
- Exercise – Explore fundamentals of data visualization with Power BI