Designing and implementing a data science solution on Azure

Course Code: DP-100T01

Course Duration: 32 Hrs.

Course Overview

The DP-100T01: Designing and Implementing a Data Science Solution on Azure course equips learners with the skills to harness machine learning capabilities in Azure for data science projects. The course includes hands-on experience and reviews data. models. Learners will have practical experiences using the Azure Machine Learning.

Course Content

Learning path 1 Design a machine learning solution

Module 1 Design a data ingestion strategy for machine learning projects

- Introduction
- Identify your data source and format
- Choose how to serve data to machine learning workflows
- Design a data ingestion solution
- Exercise: Design a data ingestion strategy
- Knowledge check
- Summary

Module 2 Design a machine learning model training solution

- Introduction
- Identify machine learning tasks
- Choose a service to train a machine learning model
- Decide between compute options
- Exercise: Design a model training strategy
- Knowledge check
- Summary

Module 3: Design a model deployment solution
- Introduction
- Understand how the model will be consumed
- Decide on real-time or batch deployment
- Exercise - Design a deployment solution
- Summary

Module 4: Design a Machine learning operations solution
- Introduction
- Explore Mops architecture
- Design for monitoring
- Design for retraining
- Knowledge check
- Summary

Learning path 2 Explore and configure the Azure Machine Learning workspace

Module 5 Explore Azure Machine Learning workspace resources and assets
- Introduction
- Create an Azure Machine Learning workspace
- Identify Azure Machine Learning resources
- Identify Azure Machine Learning assets
- Train models in the workspace
- Exercise - Explore the workspace
- Knowledge check

Module 6: Explore developer tools for workspace interaction
- Introduction
- Explore the studio
- Explore the Python SDK
- Explore the CLI
- Exercise - Explore the developer tools
- Knowledge check
- Summary

Module 7 Make data available in Azure Machine Learning
- Introduction
- Understand URIs
- Creating a data store
- Create a data asset
- Exercise - Make data available in Azure Machine Learning
- Knowledge check
- Summary

Module 8 Work with compute targets in Azure Machine Learning

- Introduction
- Choose the appropriate computing target
- Create and use a computer for instance: Create and use a computer cluster
- Exercise - Work with computer resources
- Knowledge check
- Summary

Module 9: Work with environments in Azure Machine Learning

- Introduction
- Understanding environments
- Explore and use curated environments
- Create and use custom environments
- Exercise - Work with environments
- Knowledge check
- Summary

Learning path 3 Experiment with Azure Machine Learning

Module 10: Find the best classification model with Automated Machine Learning

- Introduction
- Create an Azure Machine Learning workspace
- Identify Azure Machine Learning resources
- Identify Azure Machine Learning assets
- Train models in the workspace

Module 11 Track model training in Jupyter notebooks with MLflow

- Introduction
- Configure MLflow for model tracking in notebooks
- Train and track models in notebooks
- Exercise - Track model training
- Knowledge check
- Summary

Learning path 4: Optimize model training with Azure Machine Learning

Module 12: Run a training script as a command job in Azure Machine Learning

- Introduction
- Convert a notebook to a script
- Run a script as a command job
- Use parameters in a command job
- Exercise - Run a training script as a command job

- Knowledge check
- Summary

Module 13 Track model training with MLflow in jobs

- Introduction
- Convert a notebook to a script
- Run a script as a command job
- Use parameters in a command job
- Exercise - Run a training script as a command job
- Knowledge check
- Summary

Module 14 Perform hyperparameter tuning with Azure Machine Learning

- Introduction
- Define a search space
- Configure a sampling method
- Configure early termination
- Use a sweep job for hyperparameter tuning
- Exercise - Run a sweep job
- Knowledge check
- Summary

Module 15: Run pipelines in Azure Machine Learning

- Introduction
- Create components
- Create a pipeline

Module 16 Register an MLflow model in Azure Machine Learning

- Introduction
- Log models with MLflow
- Understand the MLflow model format
- Register an MLflow model
- Exercise - Log and register models with MLflow
- Knowledge check
- Summary

Module 17 Create and explore the Responsible AI dashboard for a model in Azure

- Introduction
- Understand Responsible AI
- Create the Responsible AI dashboard
- Evaluate the Responsible AI dashboard
- Exercise - Explore the Responsible AI dashboard
-

Learning path 6 Deploy and consume models with Azure Machine Learning

Module 18 Deploy a model to a managed online endpoint

- Introduction
- Explore managed online endpoints
- Deploy your MLflow model to a managed online endpoint
- Deploying a model to a managed online endpoint
- Test managed online endpoints
- Exercise - Deploy an MLflow model to an online endpoint
- Knowledge check
- Summary

Module 19: Deploy a model to a batch endpoint

- Introduction
- Understand and create batch endpoints
- Deploy your MLflow model to a batch endpoint
- Deploy a custom model to a batch endpoint
- Invoke and troubleshoot batch endpoints
- Exercise - Deploy an MLflow model to a batch endpoint
- Knowledge check
- Summary

Pre-Requisites

Familiarity with Azure AI Services and the Azure portal.