

Azure MLOps: From Data Science to Deployment

Course Duration: 05 days

Module 1: Designing and Preparing a Machine Learning Solution

- 1.1 Identify and analyze business requirements for a machine learning solution
- 1.2 Design a machine learning solution architecture
- 1.3 Select appropriate compute resources for a machine learning solution
- 1.4 Provision Azure resources for a machine learning solution
- 1.5 Manage data storage for machine learning workloads
- 1.6 Implement security and access controls for machine learning resources

Module 2: Exploring Data and Training Models

- 2.1 Explore and prepare data for machine learning
- 2.2 Select and apply appropriate data featurization techniques
- 2.3 Select and train appropriate machine learning models
- 2.4 Evaluate and compare machine learning models
- 2.5 Optimize machine learning models for performance

Module 3: Preparing a Model for Deployment

- 3.1 Package and deploy machine learning models
- 3.2 Implement model governance and lifecycle management
- 3.3 Monitor and troubleshoot machine learning models
- 3.4 Manage and optimize machine learning pipelines
- 3.5 Implement responsible AI principles

Module 4: Deploying and Retraining a Model

4.1 Deploy machine learning models to production environments

4.2 Implement continuous integration and continuous delivery (CI/CD) for machine learning solutions

4.3 Monitor and manage deployed machine learning models



- 4.4 Retrain and update machine learning models
- 4.5 Troubleshoot and debug deployed machine learning models
- Module 5: Introduction to MLOps 5.1 What is MLOps?
- 5.2 The benefits of MLOps
- 5.3 Key MLOps concepts

Module 6: Introduction to Azure DevOps & GitHub 6.1 Introduction to CI/CD tools: Azure DevOps & GitHub

- 6.2 Azure Boards
- 6.3 Azure Repos & GitHub
- 6.4 Azure Pipeline (Build & Release) and GitHub Actions
- 6.5 Introduction to Infrastructure as a Code (IaaC) in Azure Pipeline
- 6.6 Azure Artifacts

Module 7: Setting up your MLOps environment 7.1 Creating an Azure Machine Learning workspace

- 7.2 Connecting to your workspace
- 7.3 Setting up a Git repository

Module 8: Automating your ML workflow with GitHub Actions 8.1 Creating a GitHub Actions workflow

- 8.2 Triggering your workflow
- 8.3 Monitoring your workflow

Module 9: Protecting your main branch

9.1 Creating a branch protection rule

- 9.2 Using branch policies
- 9.3 Enabling required reviews

Module 10: Automating code checks

10.1 Setting up continuous integration (CI)



- 10.2 Running code checks
- 10.3 Configuring code coverage

Module 11: Training, testing, and deploying models

- 11.1 Creating and managing environments
- 11.2 Training and testing models
- 11.3 Deploying models to Azure

Module 12: Automating model deployment

- 12.1 Creating a deployment workflow
- 12.2 Testing your deployment
- 12.3 Monitoring your deployment

Module 13: Project Deployment using Azure MLOps (V2) Accelerator Solutions

13.1 Introduction and Structure of Accelerator Solutions

- 13.2 Supported Machine Learning Patterns:
 - Azure Machine Learning Classical ML Architecture
 - Azure Machine Learning Computer Vision Architecture
 - Azure Machine Learning NLP Architecture

13.3 Deployment of ML Solution using:

- Azure DevOps
- GitHub

GitHub Labs:

- DP-100 (Module 01 Module 04): https://github.com/MicrosoftLearning/mslearn-azure-ml
- MLOps Labs (Module 05- Module 11): https://microsoftlearning.github.io/mslearn-mlops/
- MLOps (V2) Project (Module 12): https://github.com/Azure/mlops-v2