

# Azure DevOps

**Duration: 40 Hours**

## **Course Objectives:**

- **Understand the Fundamentals of DevOps:** Gain a solid understanding of DevOps principles and practices.
- **Learn Azure DevOps Tools:** Familiarize with Azure DevOps services and tools.
- **Implement Continuous Integration and Continuous Deployment (CI/CD):** Learn to set up and manage CI/CD pipelines.
- **Work with Source Control:** Understand version control using Git and Azure Repos.
- **Automate Testing and Deployment:** Learn to automate the testing and deployment processes.
- **Monitor and Manage Applications:** Gain skills in monitoring and managing applications in Azure.
- **Collaborate Effectively:** Learn to use Azure Boards for agile project management and collaboration.
- **Implement Security Practices:** Understand and apply security practices in DevOps processes.

## **Module 1: Introduction to DevOps (4 hours)**

- What is DevOps?
- Benefits of DevOps
- DevOps Tools and Technologies
- Introduction to Azure DevOps

## **Module 2: Azure DevOps Services Overview (4 hours)**

- Azure Boards
- Azure Repos
- Azure Pipelines
- Azure Test Plans
- Azure Artifacts

## **Module 3: Getting Started with Azure DevOps (4 hours)**

- Creating and setting up an Azure DevOps Account
- Overview of the Azure DevOps Dashboard
- Creating Projects and Teams
- Introduction to Azure DevOps CLI

## **Module 4: Source Control with Azure Repos (6 hours)**

- Introduction to Version Control
- Git Fundamentals
- Working with Azure Repos
- 1. Creating and Managing Repositories
- 2. Branching and Merging Strategies
- 3. Pull Requests and Code Reviews

#### **Module 5: Continuous Integration with Azure Pipelines (6 hours)**

- Introduction to CI/CD
- Setting up Build Pipelines
- 1. YAML vs Classic Editor
- 2. Integrating with Azure Repos and GitHub
- Running and Monitoring Builds
- Managing Build Artifacts

#### **Module 6: Continuous Deployment with Azure Pipelines (6 hours)**

- Setting up Release Pipelines
  1. Stages, Jobs, and Tasks
  2. Deploying to Azure Services
- Managing Pipeline Variables and Secrets
- Rollback Strategies

#### **Module 7: Automated Testing (4 hours)**

- Introduction to Automated Testing
- Setting up Unit Tests, Integration Tests, and Functional Tests
- Running Tests in Pipelines
- Test Reporting and Analysis

#### **Module 8: Infrastructure as Code (IaC) with Azure (4 hours)**

- Introduction to IaC
- Using Azure Resource Manager (ARM) Templates
- Introduction to Terraform with Azure
- Setting up IaC Pipelines

#### **Module 9: Monitoring and Logging (4 hours)**

- Introduction to Azure Monitor
- Setting up Application Insights
- Monitoring Pipelines and Applications
- Analyzing Logs and Metrics

#### **Module 10: Security and Compliance (4 hours)**

- Introduction to DevSecOps

- Implementing Security in Pipelines
- Managing Secrets with Azure Key Vault
- Compliance and Governance in Azure DevOps

### **Module 11: Agile Project Management with Azure Boards (4 hours)**

- Introduction to Agile and Scrum
- Using Azure Boards for Work Item Tracking
- Setting up and Managing Sprints
- Dashboards and Reporting

### **Module 12: Final Project and Review (4 hours)**

Group Project: Implementing a Full CI/CD Pipeline