

## Module 1: Introduction to Azure DevOps and Basic Concepts

- **Introduction to Azure DevOps**
  - What is Azure DevOps?
  - Key components: Azure Repos, Pipelines, Boards, Test Plans, Artifacts
  - Benefits of using Azure DevOps
- **Setting Up Azure DevOps**
  - Creating an Azure DevOps account
  - Navigating the Azure DevOps portal

## Module 2: Azure DevOps Projects and Repositories

- **Creating and Managing Projects**
  - Creating a new project in Azure DevOps
  - Configuring project settings and permissions
- **Version Control with Azure Repos**
  - Introduction to Git in Azure Repos
  - Creating and managing repositories
  - Commit, branch, merge, and pull requests

## Module 3: Azure DevOps Boards

- **Work Item Management**
  - Introduction to work items: user stories, tasks, bugs
  - Creating and managing work items
- **Agile Planning with Boards**
  - Setting up and using Kanban boards
  - Sprint planning and backlog management
- **Using Queries and Dashboards**
  - Creating and running queries
  - Customizing dashboards for project insights

## Module 4: Continuous Integration with Azure Pipelines

- **Introduction to Azure Pipelines**
  - What is Continuous Integration (CI)?
  - Importance of CI in DevOps
  - Overview of Azure Pipelines

- **Creating CI Pipelines**
  - Setting up a build pipeline
  - Integrating with source control (Azure Repos, GitHub)
- **Build Pipeline Configuration**
  - Build Pipeline Essentials
  - YAML vs. classic pipeline editor
  - Configuring build tasks and agents
- **Using Templates and Variables**
  - Creating reusable templates
  - Managing variables and secrets in pipelines
- **Advanced Build Techniques**
  - Build Triggers and Conditions
  - Configuring triggers: scheduled, continuous, gated
  - Using conditional logic in pipelines
- **Build Artifacts and Reports**
  - Publishing and consuming artifacts
  - Generating and publishing test reports
- **Pipeline as Code**
  - YAML Pipelines Deep Dive
  - Writing and managing YAML pipeline definitions
  - Best practices for pipeline as code

## Module 5: Continuous Delivery and Deployment

- **Introduction to Continuous Delivery (CD)**
  - What is Continuous Delivery?
  - Key concepts: release, deployment, rollback
  - Benefits of CD in Azure DevOps
- **Setting Up Release Pipelines**
  - Creating and configuring a release pipeline
  - Defining stages and environments
- **Deploying Applications**
  - Deployment to Azure Services
  - Deploying to Azure App Services, Virtual Machines, AKS
  - Using Azure Resource Manager (ARM) templates for deployment
- **Multi-Stage Pipelines**
  - Creating and managing multi-stage pipelines
  - Defining approval gates and triggers

- **Advanced Deployment Strategies**
  - Deployment Patterns: Blue-green deployments, canary releases, and feature toggles
  - Infrastructure as Code with Azure
  - Using ARM templates and Terraform for infrastructure deployment

## Module 6: Integrating with Azure DevOps Services

- **Integration with Other Azure Services**
  - Integrating with Azure Monitor, Application Insights, and Log Analytics
  - Integrating with Azure Logic Apps for workflow automation and business process integration
- **Extending Azure DevOps**
  - Using extensions and custom integrations

## Module 7: Testing, Monitoring, and Security

- **Automated Testing with Azure DevOps**
  - Introduction to Automated Testing
  - Types of tests: unit, integration, functional
  - Benefits of automated testing in CI/CD
- **Configuring Test Plans**
  - Creating and managing test plans in Azure DevOps
  - Running automated tests as part of the pipeline
- **Monitoring and Logging**
  - Monitoring with Azure Monitor
  - Setting up and configuring Azure Monitor
  - Using Application Insights for application monitoring
- **Log Management**
  - Collecting and analyzing logs with Azure Log Analytics
- **Security and Compliance**
  - Securing Your DevOps Environment
  - Best practices for security in Azure DevOps
  - Managing secrets and sensitive data
- **Compliance and Governance**
  - Ensuring compliance with regulations and standards
  - Using Azure Policy and Azure Security Center
- **Incident Management and Troubleshooting**

- Incident Response
- Handling incidents and outages
- Troubleshooting tools and techniques

## **Module 8: Advanced Azure DevOps Practices**

- **Advanced CI/CD Techniques**
  - Pipeline Optimization
  - Improving pipeline performance and efficiency
  - Advanced Pipeline Features
  - Using task groups, job dependencies, and deployment groups
- **DevOps for Microservices and Containers**
  - Microservices Architecture
  - Deploying microservices with Azure DevOps
  - Containerization with Azure Kubernetes Service (AKS)
  - Managing and deploying containers with AKS
- **DevOps for Serverless Applications**
  - Serverless Computing
  - Deploying and managing Azure Functions
  - Integrating serverless applications with Azure DevOps
- **DevOps Metrics and KPIs**
  - Measuring DevOps Performance
  - Key metrics: lead time, deployment frequency, mean time to recovery
  - Using Azure DevOps Analytics
  - Setting up and using Azure DevOps Analytics

## **Module 9: Capstone Project and Review**

- **Capstone Project**
  - Project Planning
  - Define a project that integrates multiple Azure DevOps services
  - Implementation
  - Implement the project using Azure DevOps tools and practices
  - Document each step and the decisions made
- **Capstone Project Presentation**
  - Presentation Preparation
  - Prepare a presentation of the project
  - Project Presentation and Review

- Present the project to peers or instructors
- **Final Review and Exam**
  - Review of Key Concepts
  - Final Exam
  - Written and practical exam to assess understanding

## **Module 10: Azure DevOps in the Real World and Career Planning**

- **Real-world Azure DevOps**
  - Case studies and best practices
- **Preparing for Azure DevOps Careers**
  - Job roles and career paths in Azure DevOps
- **Celebration and Future Planning**
  - Celebration of Achievements
  - Reflect on the learning journey
  - Next Steps
  - Planning for continuous learning and growth in Azure DevOps