

CloudTech Pvt Ltd

Azure DevOps Training Course Outline

Last Modified: Aug 2025

Module 1: Introduction to DevOps & Azure

- DevOps principles & lifecycle on Azure
 - Azure global infrastructure (Regions, Availability Zones, Edge)
 - Azure Resource Manager (ARM) overview
 - Azure CLI, PowerShell, and Portal basics
 - Shared responsibility model in Azure
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Module 2: Source Control & Collaboration

- **Azure Repos** (Git-based repositories)
 - Branching strategies (GitFlow, trunk-based)
 - Pull requests & code review workflows
 - Integrating GitHub / external repos
 - Work Item tracking with **Azure Boards** (Scrum, Kanban)
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Module 3: Continuous Integration (CI)

- **Azure Pipelines** for CI (YAML vs Classic)
 - Build agents & self-hosted runners
 - Pipeline variables, templates, and tasks
 - Automated testing in pipelines
 - Artifact storage with **Azure Artifacts**
 - Event-driven builds with GitHub integration
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Module 4: Continuous Delivery / Deployment (CD)

- Multi-stage pipelines in Azure Pipelines
 - Deployment strategies:
 - Rolling updates
 - Blue/Green
 - Canary releases
 - Release management in Pipelines
 - Deployment to Azure App Service, Functions, VM Scale Sets, and AKS
 - Automated rollback and approvals
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Module 5: Infrastructure as Code (IaC)

- **ARM Templates** (Azure Resource Manager)

- **Bicep language** for IaC
 - **Terraform on Azure** (optional cross-skill)
 - Configuration management with **Azure Automation & DSC**
 - Secrets & config management with **Azure Key Vault**
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Module 6: Containers & Orchestration

- Docker fundamentals
 - **Azure Container Registry (ACR)**
 - **Azure Kubernetes Service (AKS)** basics
 - **Azure Container Instances (ACI)** for lightweight workloads
 - CI/CD for AKS with Pipelines & GitHub Actions
 - Helm charts & GitOps integration
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Module 7: Serverless DevOps

- **Azure Functions** deployment automation
 - Event-driven pipelines with Event Grid
 - **Durable Functions** for orchestration
 - Azure Logic Apps in CI/CD workflows
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Module 8: Monitoring, Logging & Observability

- **Azure Monitor** (metrics, dashboards, alerts)
 - **Log Analytics & Kusto Query Language (KQL)**
 - **Application Insights** (APM & distributed tracing)
 - Centralized logging strategies
 - Integrating monitoring with Pipelines
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Module 9: Security & Compliance in DevOps

- **Azure Active Directory (AAD)** & RBAC best practices
 - Azure Key Vault for secrets & certificates
 - Security scanning in pipelines (SonarCloud, WhiteSource, Defender for DevOps)
 - **Azure Policy** for compliance automation
 - DevSecOps workflows in Azure Pipelines
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Module 10: Scaling & High Availability

- Scaling App Service, AKS, and VMs
 - Load balancing with **Azure Front Door & Application Gateway**
 - Availability Zones & multi-region strategies
 - Global distribution with **Azure Traffic Manager**
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Module 11: Cost Optimization in DevOps

- **Azure Cost Management & Billing**
 - Optimizing CI/CD pipelines for cost
 - Rightsizing compute workloads
 - Using Spot VMs in pipelines
 - Budget alerts & governance
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Module 12: Advanced Topics & Real-World Projects

- Multi-tenant DevOps with Azure DevOps Organizations & Projects
 - Hybrid cloud DevOps with **Azure Arc**
 - GitOps with FluxCD on AKS
 - Advanced deployment with Service Mesh (Istio/Linkerd on AKS)
 - Case Study: End-to-End Azure DevOps pipeline
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Sample Project

Objective: Build a complete CI/CD pipeline on Azure that:

- Uses **Azure Repos / GitHub** for source control
- Builds code with Azure Pipelines (CI)
- Deploys to **AKS / App Service / Functions** (CD)
- Provisions infrastructure using **Bicep/ARM/Terraform**
- Implements monitoring with **Azure Monitor & App Insights**
- Secures pipelines with **Azure Key Vault & Policies**

