

AZ - 400 : Microsoft Azure DevOps Engineer

Course Outline

Module 1: Introduction to Microsoft Azure

Lessons:

- Introduction to cloud computing
- What is Microsoft Azure?
- Microsoft Azure Services
- Creating a Microsoft Azure Account
- Azure CLI, Azure PowerShell
- Managing Azure Resources & Subscriptions
- Azure Resource Manager
- Microsoft Azure Architecture

Module 2: Introduction to ARM & Azure Storage

Lessons:

- Azure Resources & Subscriptions
- Azure Resource Manager
- Managing Azure Resources
- Azure Tags
- Azure Storage Account & its types
- Azure Blob Storage
- Azure Content Delivery Network (CDN)
- Azure Files Storage
- Azure File Sync

Module 3: Introduction to Azure Storage

Lessons:

- Azure Table Storage
- Azure Queue Storage
- Azure Storage Explorer
- Azure Shared Access Signature (SAS)
- Azure Databox
- Azure Storage Replication
- Data Replication Options
- Azure Import/Export Service

Module 4: Azure Virtual Machines

Lessons:

- Azure Virtual Machines
- Data Disks in Azure
- Azure VMs & Interfaces
- ARM templates
- VHD templates
- Custom Images of Azure VM
- Virtual Machine Scale Sets

- Virtual Machine Availability Sets

Module 5: Azure App and Container Services

Lessons:

- App Service Web App for Containers
- App Service plan
- Networking for an App Service
- Deployment slots
- Container image
- Azure Kubernetes Service
- Azure Container Registry

Module 6: Azure Networking I

Lessons:

- Azure Virtual Networks
- Azure Vnet Components
- IP Address Public & Private IPs
- Azure Vnet Subnets
- Azure Network Interface Cards (NIC)
- Network Security Group (NSG)
- Route Tables
- Service Tags
- Azure DNS
- Private DNS

Module 7: Azure Networking II

Lessons:

- Application Gateway
- Azure Front Door Service
- Azure Traffic Manager
- Application Security Groups
- Azure Load Balancers
- Azure Firewall
- Azure Bastion
- Network Watcher
- Azure Express Route
- Express Route Circuits
- Express Route Peering

Module 8: Authentication and Authorization in Azure using RBAC

Lessons:

- Identity and Access Management in Azure
- Role Based Access Management (RBAC)
- Role Definitions
- Role Assignment in Azure Resources
- Azure Users & Groups
- RBAC Policies

Module 9: Microsoft Azure Active Directory

Lessons:

- Azure Active Directory (Azure AD)
- Windows AD Vs Azure AD
- Azure AD Users
- Azure AD Groups
- Azure AD Domains
- Azure AD Tenants
- Authentication Options
- Azure AD Connect
- Self Service password Reset (SSPR)
- Multi Factor Authentication (MFA)
- Resource Locks

Module 10: Azure Monitoring

Lessons:

- Azure Monitor
- Azure Metrics
- Log Analytics
- Alerts and actions
- Application Insights
- Backup reports
- Recovery Services Vault
- Backing Up Azure Virtual Machines
- VM Backup Policies
- Restoring Azure Virtual machines

Module 11: Infrastructure Setup

Lessons:

- EC2 Walkthrough
- Installation of DevOps Tools on cloud

Module 12: Introduction to DevOps

Lessons:

- What is Software Development
- Software Development Life Cycle
- Traditional Models for SDLC
- Why DevOps?
- What is DevOps?
- DevOps Lifecycle
- DevOps Tools

Module 13: Continuous Testing

Lessons:

- What is Continuous Testing?
- What is Maven?
- Running Test Cases on Chromium Web Driver

- What is Headless Mode?

Module 14: Continuous Integration using Jenkins

Lessons:

- Introduction to Continuous Integration
- Jenkins Master Slave Architecture
- Understanding CI/CD Pipelines
- Creating an end to end automated CI/CD Pipeline

Module 15: Software Version Control

Lessons:

- What is Version Control?
- Types of Version Control System
- Introduction to SVN
- Introduction to Git
- Git Lifecycle
- Common Git Commands
- Working with Branches in Git
- Merging Branches
- Resolving Merge Conflicts
- Git Workflow

Module 16: Continuous Deployment: Containerization with Docker

Lessons:

- Introduction to Docker
- Understanding Docker Lifecycle
- Components of Docker Ecosystem
- Common Docker Operations
- Creating a DockerHub Account
- Committing changes in a Container
- Pushing a Container Image to DockerHub
- Creating Custom Docker Images using Dockerfile

Module 17: Containerization with Docker: Ecosystem and Networking

Lessons:

- What are Docker Volumes
- Deploying a Multi Tier Application using Docker Network
- Using Docker Compose to deploy containers
- What is Container Orchestration
- Container Orchestration Tools
- Introduction to Docker Swarm
- Deploying a 2-Node Cluster using Docker Swarm

Module 18: Configuration Management using Puppet

Lessons:

- Need of Configuration Management
- Configuration Management Tools

- What is Puppet
- Puppet Architecture
- Setting up Master Slave using Puppet
- Puppet Manifests
- Puppet Modules
- Applying configuration using Puppet
- Puppet File Server

Module 19: Configuration Management using Ansible

Lessons:

- What is Ansible?
- Ansible vs Puppet
- Ansible Architecture
- Setting up Master Slave using Ansible
- Ansible Playbook
- Ansible Roles
- Applying configuration using Ansible

Module 20: Continuous Orchestration using Kubernetes

Lessons:

- Introduction to Kubernetes
- Docker Swarm vs Kubernetes
- Kubernetes Architecture
- Deploying Kubernetes using Kubeadms
- Alternate ways of deploying Kubernetes
- YAML Files
- Creating a Deployment in Kubernetes using YAML
- Services in Kubernetes
- Ingress in Kubernetes
- Case Study – Kubernetes Architecture

Module 21: Continuous Monitoring using Nagios

Lessons:

- What is Continuous Monitoring?
- Introduction to Nagios
- Nagios Architecture
- Monitoring Services in Nagios
- What are NRPE Plugins?
- Monitoring System Info using NRPE plugins

Module 22: Terraform Modules & Workspaces

Lessons:

- What is Infrastructure as a code
- IaC vs Configuration Management
- Introduction to Terraform
- Installing Terraform on AWS
- Basic Operations in Terraform

- Terraform Code Basics
- Deploying an end-to-end architecture on AWS using Terraform

Module 23: Azure DevOps and Azure Repos

Lessons:

- Azure devops architecture
- Key features
- Azure devops tools
- Azure devops organizations and projects
- Introduction to Azure Repos
- Compare TFVC and Git
- Key concepts in azure repos
- Search your code in Repos
- What is TFVC
- Azure Repos Integrations

Module 24: Azure Artifacts and Azure Test Plans

Lessons:

- What are Azure artifacts
- Key concepts in artifacts
- Working with packages
- Feeds
- Views and upstream sources
- Connecting to azure pipelines
- What are Azure test plans
- Exploratory and manual testing
- Test from kanban board
- Creating Test Plans
- Testing web apps

Module 25: Azure Pipelines

Lessons:

- What is Azure Pipelines
- Why use Azure Pipelines
- Deploying to Azure
- Key concepts in Pipelines
- CI Triggers in pipelines
- YAML Basics
- Ecosystems and Integration
- Setting up CI build
- Adding Tests to the Pipeline
- Agents and Tasks

Module 26: Azure Boards

Lessons:

- What is Azure Boards
- Why use azure boards

- Agile project management best practices
- Basic concepts of Azure Boards
- Connecting boards to github
- Work items
- Kanban boards
- Sprints
- Scrum and plans
- Azure Boards integrations

Module 27: Terraform with Azure

Lessons:

- What is Infrastructure as a code?
- IaC vs Configuration Management
- Introduction to Terraform
- Installing Terraform on AWS
- Basic Operations in Terraform
- Terraform Code Basics
- Deploying an end-to-end architecture on Azure using Terraform