Program **Curriculum**

Module 1
Introduction to Microsoft Azure

- 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

- 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

- 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

- 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

- 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

- 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

- 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

- 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

- 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

- 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

- EC2 Walkthrough
- Installation of DevOps Tools on cloud

Module 12

Introduction to DevOps

- 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

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

Module 14

Continuous Integration using Jenkins

- 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

- 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

- 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

- 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

- 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

- 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

- 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

- What is Continuous Monitoring?
- 21.2 Introduction to Nagios
- 21.3 Nagios Architecture

- Monitoring Services in Nagios
- What are NRPE Plugins?
- Monitoring System Info using NRPE plugins

Module 22

Terraform Modules & Workspaces

- 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 and end-to-end architecture on AWS using Terraform

Module 23

Azure DevOps and Azure Repos

- 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

- 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

- What is Azure Pipelines

Program **Curriculum**

- 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

- 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

- 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 and end-to-end architecture on Azure using Terraform

Module 28
MAVEN

- AGENDA
- WHY MAVEN?
- WHAT IS MAVEN?
- WHAT DOES MAVEN DO?
- BUILDING POM FILES
- MAVEN REPOSITORIES
- MAVEN INSTALLATION
- MAVEN HANDS-ON

Module 29
SONARQUBE

- AGENDA
- WHAT IS SOFTWARE TESTING?
- DYNAMIC TESTING
- STATIC TESTING
- WHAT IS SONARQUBE?
- FEATURES OF SONARQUBE
- SONARQUBE INSTALLATION
- SONARQUBE HANDS-ON

Module 30
XLDEPLOY

- AGENDA
- WHAT IS XLDEPLOY?
- FEATURES OF XLDEPLOY
- XLDEPLOY INSTALLATION
- XLDEPLOY HANDS-ON

Module 31
TEAMCITY

- AGENDA
- WHAT IS TEAMCITY?
- FEATURES OF TEAMCITY
- TEAMCITY INSTALLATION
- TEAMCITY HANDS-ON

Module 32
JFROG

- AGENDA
- WHAT IS AN ARTIFACT?
- WHAT IS JFROG ARTIFACTORY?
- WHY SHOULD WE USE JFROG FOR DEVOPS?
- JFROG ARTIFACTORY INSTALLATION
- JFROG ARTIFACTORY HANDS-ON

Module 33
MS BUILD

- AGENDA
- WHAT IS MS BUILD?
- MS BUILD PROJECT FILE
- MS BUILD INSTALLATION
- MS BUILD HANDS-ON

Module 34

NEXUS

- AGENDA
- WHAT IS AN ARTIFACT?
- WHAT IS NEXUS REPOSITORY?
- FEATURES OF NEXUS REPOSITORY
- NEXUS VS ARTIFACTORY
- NEXUS REPOSITORY INSTALLATION
- NEXUS REPOSITORY HANDS-ON

Module 35

NPM

- AGENDA
- WHAT IS NODE.JS?
- WHAT IS NPM?
- NPM INSTALLATION
- NPM HANDS-ON – LAUNCHING A SAMPLE WEB SERVER
- NPM HANDS-ON – USING EXPRESS.JS TO WRITE SAMPLE WEB SERVER CODE + COMMON COMMANDS
- NPM HANDS-ON – CREATING A NODE.JS DOCKER IMAGE

Module 36

ELK

- AGENDA
- WHAT IS ELK?
- COMPONENTS OF ELK
- ELK FLOW
- FEATURES OF ELK
- ELK INSTALLATION
- ELK HANDS-ON – ANALYSING APACHE LOGS WITH LOGSTASH & KIBANA
- ELK HANDS-ON – ANALYSING .CSV LOGS WITH LOGSTASH & KIBANA
- ELK HANDS-ON – ANALYSING REAL TIME WEB LOGS WITH BEATS & KIBANA

Skills to Master

- Azure subscriptions
- Role-based Access Control (RBAC)
- Terraform
- Jenkins
- Azure Content Delivery Network (CDN)
- Ansible
- Nagios
- Azure Resource Manager (ARM)
- Git
- Docker
- Selenium
- Maven
- Puppet
- Kubernetes