GREENS TECHNOLOGYS

Greens Technology is a leading Training and Placements company in Chennai. We are known for our practical approach towards trainings that enable students to gain real-time exposure on competitive technologies. Trainings are offered by employees from MNCs to give a real corporate exposure. We make sure that all our sessions are very much interactive and well structured. We preferpractical approach rather than theoretical information to master the technical depth of the technology. We provide excellent Lab Handouts for practice including Real-time Case Studies and Projects on ALL courses. Our Trainings are focused on perfect improvement of technical skills for Fresher's and working professional. Our Training classes are sure to help the trainee with COMPLETE PRACTICAL TRAINING and Real-time methodologies.

Azure CLOUD & DEVOPS TOOLS

COURSE OVERVIEW

Azure & DevOps is a multidisciplinary domain that combines cloud computing, automation, and continuous delivery practices to design, deploy, and manage scalable applications. **Microsoft Azure** forms the foundation of cloud infrastructure, offering core services such as Virtual Machines, Azure Storage, Virtual Networks (VNet), Azure Active Directory (Entra ID), Azure SQL Database, and Azure Functions to provision compute, storage, networking, identity, and security resources on demand. These services enable organizations to build highly available, secure, and cost-optimized systems without managing physical data centers.

DevOps complements Azure by streamlining the software development lifecycle through automation, collaboration, and continuous integration and delivery. Tools like Git and Azure Repos manage source code and version control, while CI/CD pipelines using **Azure DevOps Pipelines**, GitHub Actions, or Jenkins automate build, test, and deployment workflows. Infrastructure as Code (IaC) tools such as **Terraform**, Azure Resource Manager (ARM) templates, and Bicep allow teams to define and manage cloud infrastructure programmatically, ensuring consistency, scalability, and repeatability across environments. Configuration management tools like **Ansible** further automate server provisioning and application configuration.

Containerization and orchestration play a vital role in modern Azure DevOps workflows. **Docker** packages applications into portable containers, while **Kubernetes** and **Azure Kubernetes Service (AKS)** manage containerized workloads at scale. These technologies enable automated scaling, rolling deployments, self-healing applications, and high availability for cloud-native architectures.

Monitoring and logging are critical for maintaining reliability and performance in production environments. Tools such as **Azure Monitor**, **Log Analytics**, **Application Insights**, and **Prometheus** provide real-time insights into application performance, infrastructure health, logs, and metrics, enabling proactive monitoring, faster troubleshooting, and efficient incident response.

Together, **Azure and DevOps** create a robust ecosystem where cloud infrastructure, automation, and continuous delivery come together. This synergy empowers teams to deliver applications faster, scale seamlessly, improve system reliability, and respond quickly to evolving business demands—making **Azure & DevOps** a core skill set for modern cloud engineers, DevOps engineers, and site reliability professionals.

No of Days

Topic	No of days	Theory Hours	Practical Hours
Azure	17 days	9 hrs	25 hrs
GIT	3 days	2 hrs	4 hrs
Jenkins	3 days	2 hrs	4 hrs
Docker	3 days	2 hrs	4 hrs
Kubernetes	10 days	5 hrs	15 hrs
Helm Chart	1 day	1 hr	1 hr
Argo CD	1 day	1 hr	1 hr
Terraform	3 days	2 hrs	4 hrs
Ansible	3 days	2 hrs	4 hrs
Prometheus & Grafana	1 day	1 hr	1 hr
Splunk	1 day	1 hr	1 hr
Linux	1 day	1 hr	1 hr
Python	2 days	1 hrs	3 hrs
Project 1: Azure Infra Project	1 day	1 hr	3 hrs
Project 2: Application Deployment CI CD	1 day	1 hr	3 hrs
Project 3: Infra Deployment CI CD	1 day	1 hr	3 hrs
Total	52 days	104 hrs	

Azure Cloud (34 hrs)

Day 1: Introduction to Cloud & VM

- Introduction to Cloud Computing
- Why Cloud Computing?
- History of Cloud Computing
- Evaluation of Cloud Computing
- Virtualization and Hypervisor
- Cloud Service Models
- Cloud Deployment Models
- Introduction to Azure
- Why Learn Azure?
- Data Centers and Regions
- Azure Global Infrastructure.
- Overview of Azure Regions and Availability Zones.
- What is Azure VM?
- VM Use Cases
- VM Architecture Overview
- Instance Types (General, Compute, Memory, Storage optimized)
- VM Image (OS)
- Key Pairs (Public & Private Keys)
- Network Security Groups (Inbound & Outbound Rules)
- Launching an VM (Hands-on)
- Connecting to VM (SSH for Linux, RDP for Windows)
- Understanding VM Pricing Models
- On-Demand
- Reserved Instances
- Spot Instances
- VM Instance Lifecycle

Day 2: App hosting

- What is Deployment?
- Middleware
- Hands-on How to deploy a static website in VM.

Day 3: Storage account

- Introduction to Azure storage account
- Storage account Use Cases
- Blob, File share, Table, Queue
- Storage account tier
- Versioning
- SAS (Shared Access Signature)
- Redundancy
- Encryption (At-rest & In-transit)
- Static Website Hosting on Storage account
- Lifecycle Rules
- Replication Rules
- Storage account Best Practices

Day 4: Entra ID

- What is IAM?
- Importance of IAM in Azure Security
- Users
- Groups
- Managed identity vs Service Principle
- Policies
- MFA (Multi-Factor Authentication)
- IAM Best Practices

Day 5: VNet

- What is Azure Vnet?
- VNet Components Overview
- CIDR Blocks
- Subnets (Public & Private)
- Internet Gateway
- Route Tables
- Launching VM in VNet
- VPC Security Overview

Day 6: VNet Advanced

- NAT Gateway & NAT Instance
- VNet Peering
- Private Endpoints
- Network Security Groups
- Bastion Host
- Vnet Gateway

Day 7: Azure Monitor & Alerts

- Introduction to Azure Monitor
- Azure Monitor Architecture
- Metrics vs Logs
- Log Analytics Workspace
- Collecting VM Metrics & Logs
- Custom Metrics
- Creating Metrics alerts
- Action group (Email, SMS)
- Alert processing rules
- Cost optimization in monitoring

Day 8: Application gateway

- Introduction to Application Gateway
- OSI Layer
- Components:
- Frontend IP
- Backend Pool
- Listener
- Routing rules
- Path based routing
- WAF
- SSL Termination
- Mult-site hosting

- Health probes

Day 9: LB & VMSS

- Introduction to Azure Load Balancer & Virtual Machine Scale Set
- Layer 4
- Components:
- Frontend IP
- Backend Pool
- Listener
- Routing rules
- Integration with VMSS
- LB vs Application Gateway
- Hands-on: Configure Load balancer
- High availability & Auto Scaling
- Scaling option:
- Manual scaling
- Auto scaling
- Auto scale rules

Day 10: Traffic manager & Front door

- Introduction to Azure Traffic Manager & Front door
- DNS based traffic routing
- Routing methods:
- Priority
- Weighted
- Performance
- Geographic
- Subnet routing
- Disaster recovery
- WAF
- URL, path based routing

Day 11: SQL

- Introduction to SQL
- SQL Database deployment model
- HA Architecture
- Zone redundant deployment
- Types of database
- Creation of database
- Connecting to database
- SQL Queries

Day 12: CDN, Key vault, Backup service

- Introduction to CDN
- CDN Architecture & Edge Locations
- Caching Concepts Origins & Behaviors
- Performance Optimization Use Cases
- Introduction to Azure Key Vault & Azure Backup
- CDN with:
- Blob Storage
- Web Apps
- Static Websites
- Performance Optimization Use Cases
- Introduction to Azure Key Vault & Azure Backup
- Storing Application Secrets

Day 13: Function app & ARM Template

- Serverless Computing Concepts
- Introduction to Function apps
- Creating First Functionapps
- Triggers & Events
- Best Practices
- Introduction to IAAC
- ARM template creation

Day 14: Webapps

- Introduction to Azure App Service
- PaaS Concept & Use Cases
- App Service Architecture
- Hosting Plans:
- Free / Shared
- Basic
- Standard
- Premium
- WebJobs

Day 15: DNS

- What is DNS?
- Azure DNS Overview
- Hosted Zones
- Record Set
- Health Checks
- Domain Registration

Day 16: AKS

- Containers Basics
- Docker Image Push & Pull
- Kubernetes Fundamentals
- Azure AKS Overview
- AKS Architecture
- Worker Nodes
- Pods & Services
- Deploying Application on EKS
- EKS Security Best Practices

Day 17: Azure DevOps

- Introduction to azure devops
- Azure repos
- Azure pipeline
- Azure Boards
- Azure Test plan
- Azure Artifact.

GIT (6 hrs)

Day 1

- What is Version Control?
- Centralized vs Distributed Version Control
- Introduction to Git
- Installing Git & Initial Configuration
- Git Repository (Local & Remote)
- Git Workflow Basics
- Common Git Commands
- git init, status, add, commit
- Understanding Git Snapshots
- Hands-on: Create and Manage Local Repository

Day 2

- Git Branches
- Creating & Switching Branches
- Merging Branches
- Merge Conflicts & Resolution
- Introduction to GitHub
- Pushing Code to Remote Repository
- Pull Requests Workflow
- Git Clone, Pull, Fetch
- Hands-on: Team Collaboration using GitHub

Day 3

- Git Rebase vs Merge
- Git Stash
- Git Tags
- Git Reset vs Revert
- .gitignore File
- Git Hooks (Intro)
- Git Best Practices
- Real-world Git Workflow (Feature, Release, Hotfix)

Jenkins (6 hrs)

Day 1

- What is CI/CD?
- Introduction to Jenkins
- Jenkins Architecture
- Installing Jenkins (Linux / Docker)
- Jenkins Dashboard Overview
- Creating Freestyle Jobs
- Source Code Integration (GitHub)
- Build Triggers
- Hands-on: First Jenkins Job

Day 2

- Jenkins Pipeline Concepts
- Declarative vs Scripted Pipeline
- Jenkinsfile Structure
- Pipeline Stages & Steps
- Environment Variables
- Post-build Actions
- Hands-on: CI Pipeline using Jenkinsfile

Day 3

- Jenkins Plugins Overview
- Credential Management
- Parameterized Builds
- Jenkins Agents & Nodes
- Integration with Docker
- Notifications (Email, Slack)
- Jenkins Best Practices
- CI/CD Pipeline Demo

Terraform (6 hrs)

Day 1

- What is Infrastructure as Code?
- Introduction to Terraform
- Terraform Architecture
- Installing Terraform
- Terraform Providers
- Terraform Configuration Files
- terraform init, plan, apply
- Hands-on: Create AWS Resources using Terraform

Day 2

- Terraform State File
- Remote Backend
- State Locking
- Variables & Outputs
- Terraform Modules
- Reusable Infrastructure
- Hands-on: Modular Terraform Setup

Day 3

- Terraform Workspaces
- Dependency Management
- Lifecycle Rules
- Terraform Import
- Best Practices
- Terraform vs CloudFormation
- Real-world IaC Project

Ansible (6 hrs)

Day 1

- What is Configuration Management?
- Introduction to Ansible
- Ansible Architecture
- Agentless Nature of Ansible
- Inventory Files
- Ansible Ad-hoc Commands
- Modules Overview
- Hands-on: Basic Ansible Commands

Day 2

- YAML Basics
- Writing Ansible Playbooks
- Tasks, Handlers, Variables
- Conditionals & Loops
- Roles & Directory Structure
- Hands-on: Server Configuration using Playbooks

Day 3

- Ansible Vault
- Dynamic Inventory
- Error Handling
- Ansible Best Practices
- Ansible Integration with AWS
- Real-world Configuration Management Project

Prometheus & Grafana (2 hrs)

Day 1

- What is Monitoring and Observability?
- Difference between Monitoring, Logging, and Tracing
- Introduction to Prometheus
- Prometheus Architecture
- Time-series database
- Targets & Scraping
- Metrics, Labels, and Time Series
- Prometheus Data Model
- Exporters
- Node Exporter
- Introduction to PromQL
- Basic queries
- Filtering and aggregations
- Introduction to Grafana Architecture
- Connecting Prometheus as a Data Source
- Creating Dashboards and Panels
- Alerts and Alertmanager (Overview)

Splunk (2 hrs)

Day 1

- What is Log Management?
- Why Centralized Logging is Required?
- Introduction to Splunk
- Splunk Use Cases (Monitoring, Security, Troubleshooting)
- Splunk Architecture
    - Forwarder
    - Indexer
    - Search Head
- Universal Forwarder vs Heavy Forwarder
- Data Inputs and Sources
- Indexes and Indexing Process
- Understanding Events and Fields
- Introduction to SPL (Search Processing Language)
- Basic SPL Commands
    - Search
    - Filter
    - Stats
- Creating Reports and Dashboards
- Alerts and Real-time Monitoring
- Hands-on: Log Analysis using Splunk
- Installing Terraform

Python (4 hrs)

Day 1

- Introduction to Python
- Why Python for DevOps & Cloud?
- Installing Python
- Python Syntax and Indentation
- Variables and Naming Conventions
- Data Types Overview
- Operators
    - Arithmetic Operators
    - Comparison Operators
    - Logical Operators
- Conditional Statements
    - if
    - elif
    - else
- Loops
    - for loop
    - while loop
- break and continue statements
- Hands-on: Basic Python Programs

Day 2

- Functions in Python
- Defining and Calling Functions
- Function Arguments
    - Positional
    - Keyword
- Return Statements
- Built-in Functions
- String Data Type
- String Operations
- Common String Functions
- Collections in Python
    - List
    - Tuple
    - Set
    - Dictionary
- Iterating over Collections
- Basic Exception Handling
    - try
    - except
- Hands-on: Python Examples related to DevOps use cases

Docker (6 hrs)

Day 1

- What are Containers?
- Containers vs Virtual Machines
- Introduction to Docker
- Docker Architecture
- Installing Docker
- Docker Images & Containers
- Common Docker Commands
- Hands-on: Run First Container

Day 2

- Dockerfile Basics
- Building Custom Images
- Image Layers & Caching
- Docker Volumes
- Docker Networking
- Exposing Ports
- Hands-on: Containerize a Web Application

Day 3

- Docker Compose
- Multi-container Applications
- Docker Registry & Docker Hub
- Image Tagging & Versioning
- Docker Security Basics
- Docker Best Practices

Kubernetes (20 hrs)

Day 1

- Introduction to Kubernetes Architecture
- Kubernetes Components (API Server, etcd, Scheduler, Controller Manager)
- Understanding Control Plane & Worker Nodes
- Installing Kubernetes using Minikube
- Installing Kubernetes using Kops (AWS-based)
- Comparing Minikube vs Kops
- kubectl Installation & Configuration
- Basic kubectl Commands
- Hands-on: Create and Verify Kubernetes Cluster

Day 2

- What is a Pod?
- Pod Lifecycle
- Multi-container Pods
- ReplicaSet
- Deployment Controller
- Rolling Updates & Rollbacks
- DaemonSet
- Namespace Concepts
- Creating & Managing Namespaces
- Hands-on: Deploy Applications using Deployments

Day 3

- Why Services are Required?
- Service Types Overview
- ClusterIP Service
- NodePort Service
- LoadBalancer Service
- Service Discovery
- DNS in Kubernetes
- Hands-on: Expose Applications using Services

Day 4

- Kubernetes Authentication & Authorization
- RBAC Overview
- Roles & RoleBindings
- ClusterRoles & ClusterRoleBindings
- Service Accounts
- Introduction to IRSA (IAM Roles for Service Accounts – EKS)
- Secure Access to AWS Services from Pods
- Hands-on: RBAC Configuration

Day 5

- Kubernetes Scheduler Overview
- Node Selector
- Node Affinity (Required & Preferred)
- Pod Affinity & Anti-Affinity
- Taints & Tolerations

- Use Cases & Best Practices
- Hands-on: Pod Scheduling Scenarios

Day 6

- Kubernetes Storage Architecture
- Volumes Overview
- emptyDir Volume
- hostPath Volume
- Persistent Volumes (PV)
- Persistent Volume Claims (PVC)
- Storage Classes
- AWS EBS CSI Driver
- AWS EFS CSI Driver
- Hands-on: Stateful Storage Setup

Day 7

- Liveness probes
- Readiness probes
- Startup probes
- Init containers
- Sidecar containers
- Environment variables
- ConfigMaps & Secrets

Day 8

- Ingress concepts
- Ingress vs Service LoadBalancer
- Ingress resources
- Ingress controllers
- AWS ALB as Ingress Controller
- Annotations, TLS, HTTPS
- Hands-on ALB Ingress setup

Day 9

- Jobs
- CronJobs
- StatefulSets
- Headless Services
- ExternalName Service
- Resource Requests & Limits
- Horizontal Pod Autoscaler (HPA)
- Metrics Server
- Hands-on: Autoscaling applications

Day 10

- Custom Resource Definitions (CRDs)
- Operators & Operator SDK
- Container Network Interface (CNI)
- CNI plugins (Calico, Flannel, AWS VPC CNI)
- Container Runtime Interface (CRI)
- containerd, CRI-O
- Real-world architecture & best practices

Helm Chart (2 hrs)

Day 1

- What is Helm?
- Why Helm is Required in Kubernetes?
- Helm Architecture
  - Helm Client
  - Helm Charts
  - Helm Repository
- Understanding Helm Chart Structure
  - Chart.yaml
  - values.yaml
  - templates/
- Helm Templating Basics
- Using values.yaml for Configuration
- Helm Commands
  - helm install
  - helm upgrade
  - helm rollback
  - helm uninstall
- Helm Releases and Versions
- Managing Multiple Environments using Helm
- Creating Custom Helm Charts
- Helm Best Practices

ARGO CD (2 hrs)

Day 1

- What is GitOps?
- Argo CD Architecture
- Argo CD vs Traditional CI/CD
- Installing Argo CD in Kubernetes
- Argo CD UI and CLI Overview
- Connecting Git Repository to Argo CD
- Application Manifests
- Sync Policies
- Self-healing and Drift Detection
- Rollbacks using Git History
- Managing Multiple Environments
- Argo CD Security and RBAC (Overview)

Projects (12 hrs)

- Project 1: Azure Infra Project **(4 hrs)**
- Project 2: Application Deployment CI CD **(4 hrs)**
- Project 3: Infra Deployment CI CD **(4 hrs)**