

DevOps Syllabus

Module-1

DevOps Fundamentals

SDLC lifecycle

Waterfall Model

Agile Model

DevOps

DevOps vs Traditional IT

Why and What is DevOps

Benefits & Lifecycle

Myths Of DevOps

DevOps Culture (Collaboration, Feedback Loops)

Agile, Scrum, and Lean basics

CALMS model (Culture, Automation, Lean, Measurement, Sharing)

Module-2

Linux & Shell Scripting

Linux Basics

Linux OS fundamentals (file system, permissions)

Basic commands

Shell scripting basics (variables, loops, conditions)

Package managers (apt, yum)

Module-3

Networking & Security Basics

Network layers (OSI/TCP/IP models)

TCP/IP, DNS, HTTP/HTTPS, Ports, FTP, SSH, ICMP

Firewalls, Load Balancing, Proxies, VPN

Subnetting, VPNs, NAT, CIDR, IP addressing, DHCP, routing

SSL/TLS, encryption, certificates

Security best practices for infrastructure and DevOps

Module-4

Version Control (Git)

Git basics: clone, commit, push, pull

Branching, Merging, Rebase

Resolving conflicts

Git workflows: Git Flow, Trunk-based, Fork-and-PR

Tags and releases

Module-5

Containerization (Docker)

What is Docker & why use it? Docker architecture (Engine, Daemon, Registry)

Images vs Containers

Dockerfile creation

Docker Compose

Volume, Networking, Healthchecks

Module-6

Container Orchestration (Kubernetes)

Kubernetes Architecture

Kubernetes components (Pod, Node, Cluster, etc.)

Deployments, ReplicaSets, Services, Statefulset

ConfigMaps & Secrets
RBAC (Role-Based Access Control)
Volumes, Persistent Storage
Helm basics
Ingress Controller
Monitoring with Prometheus/Grafana

Module-7

CI/CD Pipelines(Jenkins)

Concepts: Continuous Integration, Continuous Delivery/Deployment
Jenkins / GitHub Actions / Azure DevOps
Build pipelines: triggers, stages, jobs
Testing and deployment automation
Slack/email notifications

Module-8

Infrastructure as Code (IaC)- Terraform and Terragrunt

Providers, Resources, Variables, Outputs, Data, Statefile, tfvars, locals
Modules, Remote State, Workspaces
Why Terragrunt over Terraform
Terragrunt file structure
Ansible
YAML basics
Playbooks, Roles, Inventories

Module-9

AWS

VPC, Subnets, EC2 instance, Load Balancer, NACL, Security Groups
Elastic IP, Route Tables, RDS, IAM (users,roles,groups,inline policies, managed policies)
CloudTrail, CloudWatch, EKS, CloudFront(Container Delivery Network=CDN),Auto Scaling
DynamoDB, MongoDB Atlas, AWS Secret Manager

Module-10

Monitoring & Logging

Prometheus & Grafana
ELK Stack (Elasticsearch, Logstash, Kibana)
Loki (for logs in Kubernetes)
CloudWatch (AWS)

Module-11

Security in DevOps

Secrets management (Vault, K8s secrets)
Docker/Kubernetes security best practices
IAM roles and policies
SonarQube, Trivy, Veracode
CI/CD pipeline security

Module-12

Artifact Repository & Package Management

Versioning strategies
DockerHub, ECR, Harbor

Module-13

Live Project with Best Practices

Project from scratch

Module-14

Project Exercises and Interview Preparation

End-to-end Project revision.

Interview Preparations

Module-15

Moc-Interviews