

Diploma in DevOps Engineering (6 Months)

Duration: 6 Months (~240 Hours)

Mode: Live Online / Classroom

Tools & Technologies: Git, GitHub, Jenkins, Linux, Docker, Kubernetes, GitHub Actions, GitLab CI, Prometheus, Grafana, ELK/EFK Stack, AWS CloudWatch, Terraform

Certifications Prepared: LFCS: Linux Foundation Certified System Administrator, Docker Certified Associate (DCA), Certified Kubernetes Administrator (CKA) / CKAD, AWS Certified DevOps Engineer – Professional

Course 1: Source Code Management & Automation (3 Months)

Syllabus

Week 1: Linux Fundamentals & Git Basics

- Linux command-line essentials, user management, file permissions
- Installing and configuring Git
- Git workflow: init, clone, commit, push, pull
- Hands-on: Create and manage Git repository
- Assignment

Week 2: Advanced Git & Branching Strategies

- Branching, merging, rebasing
- Resolving conflicts
- Git workflows: GitFlow, feature branching
- Hands-on: Collaborative branching model
- Assignment

Week 3: GitHub & Collaboration

- Creating repositories on GitHub
- Forks, pull requests, issues, and projects
- Collaborating with teams
- Hands-on: Manage open-source style project on GitHub
- Assignment

Week 4: Jenkins Fundamentals

- Introduction to Jenkins and CI concepts

- Installing Jenkins, configuring jobs and pipelines
- Integrating Jenkins with GitHub
- Hands-on: Build automation with Jenkins
- Assignment
- Mock Interview 1

Week 5: Jenkins Pipelines

- Declarative vs scripted pipelines
- Pipeline syntax and stages
- Hands-on: Multi-branch pipeline project
- Assignment

Week 6: Automation with Shell Scripting

- Shell scripting basics
- Writing scripts for build and deployment automation
- Hands-on: Automate backup and deployment tasks
- Assignment

Week 7: Advanced Jenkins Integrations

- Integrating Jenkins with Docker and Kubernetes
- Using Jenkins plugins for automation
- Hands-on: Jenkins pipeline deploying containerized app
- Assignment

Week 8: Capstone Project & Interview Prep

- Project: Full CI/CD pipeline with Jenkins and GitHub
- Assignment
- Mock Interview 2

Course 2: CI/CD & Containerization (3 Months)

Syllabus

Week 1: CI/CD Concepts

- Introduction to Continuous Integration and Continuous Delivery
- Benefits and practices of CI/CD pipelines

- Hands-on: Setup simple CI pipeline
- Assignment

Week 2: Jenkins Advanced Features

- Pipeline-as-Code with Jenkinsfile
- Shared libraries in Jenkins
- Hands-on: Jenkinsfile for build and test pipeline
- Assignment

Week 3: Docker Fundamentals

- Installing and configuring Docker
- Docker images, containers, volumes, and networks
- Hands-on: Build and run Docker containers
- Assignment

Week 4: Advanced Docker Usage

- Docker Compose for multi-container applications
- Best practices for Dockerfiles
- Hands-on: Deploy multi-tier app using Docker Compose
- Assignment
- Mock Interview 1

Week 5: Kubernetes Fundamentals

- Kubernetes architecture: nodes, pods, deployments, services
- kubectl basics
- Hands-on: Deploy simple app on Kubernetes cluster
- Assignment

Week 6: Kubernetes Advanced

- ConfigMaps, Secrets, Ingress, Persistent Volumes
- Scaling and rolling updates
- Hands-on: Scale app with Kubernetes deployments
- Assignment

Week 7: GitHub Actions & GitLab CI

- Build CI/CD pipelines using GitHub Actions
- Introduction to GitLab CI/CD pipelines

- Hands-on: Automate testing and deployment with GitHub Actions
- Assignment

Week 8: Capstone Project & Interview Prep

- Project: CI/CD pipeline deploying Dockerized app to Kubernetes
- Assignment
- Mock Interview 2

Course 3: Cloud-Native DevOps & Monitoring (3 Months)

Syllabus

Week 1: Kubernetes Advanced Topics

- Namespaces, DaemonSets, StatefulSets
- Resource requests and limits
- Hands-on: Manage stateful applications in Kubernetes
- Assignment

Week 2: Helm Package Manager

- Helm charts, repositories
- Creating custom Helm charts
- Hands-on: Deploy apps with Helm
- Assignment

Week 3: Observability Basics

- Introduction to monitoring and observability
- Cloud-native monitoring concepts
- Hands-on: Monitor app metrics
- Assignment

Week 4: Prometheus & Grafana

- Prometheus architecture and metrics scraping
- Setting up Grafana dashboards
- Hands-on: Visualize metrics with Grafana
- Assignment
- Mock Interview 1

Week 5: Logging with ELK/EFK

- Elasticsearch, Fluentd/FluentBit, Kibana
- Centralized log management
- Hands-on: Setup EFK stack for Kubernetes logs
- Assignment

Week 6: Cloud Monitoring Tools

- AWS CloudWatch basics
- Integration with Prometheus and Grafana
- Hands-on: Monitor Kubernetes cluster with CloudWatch
- Assignment

Week 7: Security in DevOps

- DevSecOps concepts
- Image scanning and vulnerability management
- Hands-on: Implement security checks in CI/CD pipeline
- Assignment

Week 8: Capstone Project & Interview Prep

- Project: Cloud-native deployment with monitoring and logging
- Assignment
- Mock Interview 2

Learning Outcomes

- Gain strong foundation in source code management and automation
- Develop expertise in CI/CD pipelines, containerization, and orchestration
- Implement cloud-native DevOps practices with monitoring and observability
- Prepare for industry certifications: LFCS, Docker Certified Associate, CKA/CKAD, AWS DevOps Engineer – Professional
- Become industry-ready with hands-on projects and mock interviews