

DevOps Engineering Masterclass (24 Weeks)

Phase 1: Comprehensive DevOps Training (4 Months / 16 Weeks)

Week 1: Introduction to DevOps Principles

- Understanding DevOps culture, practices, and tools
- Key concepts: Collaboration between Dev and Ops, Agile methodology
- Version control basics with Git and GitHub (repositories, branching, pull requests)
- Hands-on: Set up a GitHub project and repository

Week 2: Advanced Git Practices and Source Control

- Advanced Git techniques: Rebasing, merging, conflict resolution
- Git hooks and automation
- Hands-on: Collaborative GitHub project with version control strategies

Week 3: Continuous Integration (CI) Basics

- Introduction to CI tools: Jenkins, GitHub Actions, and CircleCI
- Setting up a basic CI pipeline (build, test)
- Hands-on: Implement a CI pipeline for a simple project

Week 4: Advanced Continuous Integration (CI)

- Automating tests with CI pipelines

- Artifact management and deployment stages in CI
- Hands-on: Build and deploy an application using CI pipelines

Week 5: Continuous Deployment (CD)

- Introduction to Continuous Deployment
- Configuring CD tools for various environments (dev, staging, production)
- Hands-on: Implement a basic CD pipeline for a real application

Week 6: Containerization with Docker

- Core Docker concepts: Containers, images, Dockerfiles
- Building, running, and managing Docker containers
- Hands-on: Dockerize an existing application

Week 7: Advanced Docker and Multi-Container Applications

- Docker Compose for multi-container environments
- Networking and storage in Docker
- Hands-on: Build and deploy a multi-container application

Week 8: Introduction to Kubernetes

- Kubernetes fundamentals: Pods, services, deployments
- Basics of container orchestration with Kubernetes
- Hands-on: Deploy a simple app to a Kubernetes cluster

Week 9: Kubernetes Advanced Topics

- Managing secrets, config maps, and scaling applications

- Using Helm for Kubernetes package management
- Hands-on: Deploy and manage a real-world application on Kubernetes

Week 10: Automating Workflows with GitHub Actions

- Creating and managing GitHub Actions workflows
- Automating CI/CD pipelines using GitHub Actions
- Hands-on: Set up a build-and-deploy workflow with GitHub Actions

Week 11: Infrastructure as Code (IaC) Fundamentals

- Introduction to IaC tools: Terraform and Ansible basics
- Writing Terraform scripts to provision cloud infrastructure
- Hands-on: Set up a simple cloud environment with IaC

Week 12: Advanced Infrastructure as Code

- Ansible for configuration management and automation
- Using Terraform modules and best practices
- Hands-on: Automate cloud infrastructure deployment with Terraform and Ansible

Week 13: Monitoring and Logging Fundamentals

- Basics of monitoring tools: Prometheus, Grafana
- Logging systems: ELK stack (Elasticsearch, Logstash, Kibana)
- Hands-on: Monitor a deployed application with Prometheus and Grafana

Week 14: Observability and Advanced Monitoring

- Setting up distributed tracing with tools like Jaeger
- Best practices for logging, alerting, and incident response
- Hands-on: Build an end-to-end observability setup for an application

Week 15: Security in DevOps

- Fundamentals of DevSecOps: Integrating security into CI/CD pipelines
- Container security: Scanning images, securing registries
- Hands-on: Implement basic security checks in CI/CD pipelines

Week 16: Capstone Project

- Develop an end-to-end DevOps solution:
 - CI/CD pipeline
 - Containerized application deployment with Kubernetes
 - Monitoring and observability setup
 - Secure application deployment
- Final Project Presentation and Peer Review

Phase 2: Job Training and Real-World Application (2 Months / 8 Weeks)

Week 17-18: Job Readiness and Interview Preparation

- Resume building tailored to DevOps roles
- Mock interviews and real-world problem-solving sessions
- Hands-on: Troubleshoot and debug real-world CI/CD and deployment issues

Week 19-22: Real-World Client Projects

- Collaborate on client projects focusing on:
 - Building and maintaining CI/CD pipelines
 - Managing deployments and cloud infrastructure
 - Setting up monitoring and logging for live applications
- Weekly mentor feedback and progress updates

Week 23-24: Final Assessment and Job Placement Support

- Showcase capstone projects and client work
- Final technical interview preparation (coding, troubleshooting)
- Networking and job placement assistance