

DevOps Engineer Bootcamp – Course Syllabus (Updated Version)

Course Overview

This DevOps Engineer Bootcamp is a comprehensive, hands-on training program designed to take learners from foundational DevOps concepts to modern cloud-native and AI-powered DevOps practices. The curriculum combines Linux administration, containerization, CI/CD automation, AWS cloud services, Infrastructure as Code (IaC), Kubernetes orchestration, monitoring, security, serverless computing, and AI-assisted operations.

Phase 1 (Weeks 1–6)

Week 1 – Linux, Docker and Environment Setup

- Linux fundamentals and file system management
- Shell scripting and environment configuration
- Docker installation, image creation and container operations
- Development environment setup and toolchain validation

Week 2 – GitHub Actions and CI/CD Automation

- Git branching strategies and workflow best practices
- GitHub Actions fundamentals
- Automated testing and build pipelines
- Automated deployment and release workflows

Week 3 – AWS Core Services and Cloud Deployment

- IAM, EC2, S3 and VPC
- Security groups and access control
- Application deployment on AWS
- DNS, load balancing and networking

Week 4 – Infrastructure as Code with Terraform & Packer

- Terraform architecture and state management
- Modular infrastructure design
- Packer image creation and templates
- Infrastructure consistency through IaC

Week 5 – ECS Fargate and EKS Container Orchestration

- ECS Fargate fundamentals
- Kubernetes and EKS
- Deployment and scaling
- Container troubleshooting

Week 6 – Monitoring, Logging and Security

- CloudWatch monitoring and logging
- Prometheus metrics
- Grafana dashboards
- Security and auditing

Week 7 – Serverless and Event-Driven Architecture

- AWS Lambda
- SQS messaging
- EventBridge routing
- Event-driven design

Week 8 – AI-Powered DevOps and LLM Integration

- AI services and use cases
- LLM API integration
- AI-assisted operations
- AI-powered automation

Week 9 – Team Industry Project: Dev + DevOps

- Requirements analysis
- Architecture planning
- Collaborative development
- Project review and optimization

Week 10 – Capstone Project: Full-Stack DevOps + AI Platform

- Solution architecture
- Cloud infrastructure implementation
- AI integration
- Presentation and defence

Learning Outcomes

Participants will be able to build CI/CD pipelines, deploy and operate AWS workloads, manage infrastructure using Terraform and Packer, orchestrate containers with ECS and EKS, implement monitoring and security, design serverless architectures, integrate AI into DevOps workflows, and deliver enterprise-grade cloud solutions.