

PRODUCTION-READY TRACK

DevOps Engineering

Complete DevOps Mastery

Comprehensive DevOps bootcamp covering everything from Linux fundamentals to advanced Kubernetes, GitOps, Observability and AI for DevOps. Build real CI/CD pipelines and infrastructure as code.

18 Weeks · Beginner to Advanced · 9 modules

500+

STUDENTS TRAINED

15+

PROJECTS BUILT

95%

JOB PLACEMENT

Week 1-2

01. Linux & Scripting

TOPICS COVERED

- Linux kernel fundamentals & architecture
- File permissions & ownership (chmod, chown)
- User, group & privilege management (sudo, useradd)
- Secure remote access with SSH & SCP
- systemd service management (systemctl, unit files)
- Processes, signals & job control
- Package management & disk/mount essentials

HANDS-ON LABS

- Configure an SSH server with key-based login
- Create and manage a custom systemd service
- Write a restricted sudoers policy
- Automate server setup with shell scripts

Week 3-4

02. Containers & Docker

TOPICS COVERED

- Container runtimes: containerd & containerd-shim
- Dockerfile instructions (RUN, CMD, ENTRYPOINT, COPY, ADD, ENV)
- Shell vs exec form & the .dockerignore file
- Image optimization & best practices (small images, layer caching, non-root, HEALTHCHECK)
- Docker storage & volumes for persistent data
- Linux namespaces & container isolation
- Multi-container apps & container networking

HANDS-ON LABS

- Write an optimized multi-stage Dockerfile
- Run a Flask + MongoDB multi-container app with networking
- Apply image size & security best practices
- Persist data with Docker volumes

Week 5-6

03. Kubernetes Deep Dive

TOPICS COVERED

- Pods, ReplicaSets, Deployments, Services & Namespaces
- Scheduling: taints/tolerations, node & pod affinity
- Resource requests/limits, quotas, HPA & VPA
- ConfigMaps, Secrets, init & multi-container pods
- Storage, volumes & StatefulSets
- Networking, DNS & service networking
- Security: RBAC, ServiceAccounts, TLS & security context
- Cluster ops: kubectl upgrades & etcd backup/restore
- Packaging with Helm (templating, values, hooks, subcharts)

HANDS-ON LABS

- Deploy and expose microservices with Deployments & Services
- Control scheduling with affinity, taints & tolerations
- Secure a cluster with RBAC and ServiceAccounts
- Package an app with a custom Helm chart
- Back up & restore etcd and run blue-green / canary rollouts

Week 7-8

04. CI/CD Pipelines

TOPICS COVERED

- GitLab CI/CD architecture & runners (shared/specific)
- Pipeline building blocks: stages, jobs, artifacts, needs
- Variables, masking, predefined variables & secrets
- Rules at job & workflow level; merge requests
- Schedules, resource groups, parallel matrix & timeouts
- Caching dependencies & using services
- Unit testing, coverage & test reports
- Docker build & Kubernetes deployment from pipelines

HANDS-ON LABS

- Build a multi-stage GitLab pipeline for a Node.js app
- Configure unit tests, coverage & artifact reports
- Build and push a Docker image from the pipeline
- Deploy to Kubernetes with secrets & placeholder tokens

Week 9-10

05. Infrastructure as Code

TOPICS COVERED

- HCL fundamentals, providers & input/output variables
- Resource attributes, dependencies & lifecycle rules
- Terraform state, remote backend & state locking
- Meta-arguments: count, for_each & conditional expressions
- Datasources, functions & version constraints
- Provisioners, taints, import & debugging
- Reusable modules & workspaces
- Provisioning cloud compute (EC2 / ECS) with Terraform

HANDS-ON LABS

- Provision cloud compute with Terraform
- Build reusable Terraform modules
- Configure a remote backend with state locking
- Use count/for_each and workspaces for multi-environment setups

Week 11-12

06. Configuration Management with Ansible

TOPICS COVERED

- Ansible architecture: control node, managed nodes & inventories
- Configuration files (ansible.cfg) & precedence
- Ad-hoc commands & core modules
- Playbooks, plays & YAML structure
- Facts, variables, register & magic variables
- Variable precedence & scopes
- Conditionals, loops, blocks & error handling
- Jinja2 templating & templates
- Roles, includes/imports & reuse
- Ansible Vault for secrets & dynamic inventory

HANDS-ON LABS

- Set up a control node and managed nodes with SSH keys
- Write playbooks to deploy a multi-tier web app
- Build reusable roles and Jinja2 templates
- Encrypt secrets with Ansible Vault and use dynamic inventory

Week 13-14

07. Observability & Monitoring

TOPICS COVERED

- The three pillars of observability: metrics, logs & traces
- Prometheus architecture: TSDB, pull-based scraping & the data model
- Exporters & instrumentation: node_exporter, cAdvisor, blackbox & client libraries
- PromQL: selectors, rates, aggregations & functions
- Recording rules & alerting rules
- Alertmanager: routing, grouping, inhibition, silences & receivers
- Kubernetes service discovery & relabeling
- Grafana: data sources, dashboards, panels & template variables
- Dashboards & alerts as code (provisioning, kube-prometheus-stack)
- SLIs, SLOs & error budgets; the RED and USE methods

HANDS-ON LABS

- Deploy Prometheus & Grafana on Kubernetes with the kube-prometheus-stack Helm chart
- Instrument a sample service and scrape custom metrics via exporters
- Write PromQL queries and build Grafana dashboards with templating
- Configure Alertmanager routing and send alerts to Slack/email
- Define an SLO with a multi-window error-budget burn-rate alert

Week 15-16

08. GitOps & Production

TOPICS COVERED

- GitOps principles, benefits & trade-offs
- ArgoCD architecture & core concepts (Applications, Projects)
- Installation, reconciliation loop & sync strategies
- App health checks, sync hooks & ignoreDifferences
- Webhooks for faster reconciliation
- RBAC, local users & SSO integration
- Multi-cluster management & deployment
- ApplicationSet & generators for scale

HANDS-ON LABS

- Install ArgoCD and deploy an app declaratively
- Configure sync strategies, hooks & health checks
- Set up RBAC with local and SSO users
- Manage multiple clusters with ApplicationSet

Week 17-18

09. AI for DevOps (AIOps & AI Agents)

TOPICS COVERED

- AI & LLM foundations for engineers: prompts, tokens, context & embeddings
- AI-assisted DevOps: generate & review Dockerfiles, K8s manifests, pipelines & playbooks
- Building AI agents: tool/function calling to drive kubectl, Terraform & CI safely
- RAG over your runbooks, docs & dashboards with a vector database
- AIOps: anomaly detection, alert-noise reduction & incident correlation
- AI in observability: metric/log anomaly detection & root-cause analysis
- ChatOps: AI assistants that triage alerts & summarize incidents
- Responsible & secure AI: prompt injection, guardrails, secrets & cost control

HANDS-ON LABS

- Use an AI coding assistant to scaffold and review a CI/CD pipeline
- Run a local LLM with Ollama and build a RAG over your runbooks
- Build a DevOps agent that calls kubectl/terraform via tool-calling
- Add anomaly-based alerting on Prometheus metrics
- Build a ChatOps bot that triages alerts and summarizes incidents

TOOLS & TECHNOLOGIES

Docker

Podman

containerd

Kubernetes

Helm

Kustomize

GitHub Actions

GitLab CI

Jenkins

ArgoCD

Terraform

Ansible

Pulumi

Prometheus

Grafana

Alertmanager

Copilot

Ollama

LangChain