AWS DevSecOps Training
Complete Syllabus 2026

Master Cloud-Native DevOps, Security, and AI-Powered Automation with an industry-aligned, hands-on curriculum that takes you from fundamentals to production-grade expertise.

Trainer: **Raghu K** | www.learndevopsonline.com

WHY CHOOSE US

Why This Training?

Built by practitioners, refined by thousands of students, and designed for real-world impact.

Industry-Aligned Curriculum

Inspired by and aligned with **roadmap.sh/devops**, our syllabus covers every skill modern DevOps engineers need — from Linux to AI-powered operations. No gaps, no fluff.

One Trainer, All Topics

Raghu K teaches every single module. No hand-offs between instructors means a **consistent, coherent learning experience** where every concept builds on the last.

Live Enterprise-Grade Project

You won't just learn tools in isolation. You'll build and deploy a **complete microservices application** on AWS with full CI/CD, security gates, and observability — exactly like a production environment.

8500+ Students Trained

A proven track record with over **8,500 students** successfully trained and placed in top companies. Our graduates are working at startups and Fortune 500 enterprises alike.

"If you find content more comprehensive than ours at this price, let us know and take the course for FREE!"
— That's how confident we are in this syllabus.

YOUR TOOLKIT

Tools You'll Master

Gain hands-on proficiency with the most in-demand DevSecOps tools in the industry.

Linux OS	**Bash** SCRIPTING	**Git** VCS	**GitHub Actions** CI/CD
AWS CLOUD	**Python** SCRIPTING	**Ansible** CONFIG MGMT	**Terraform** IAC
Packer IMAGE BUILD	**Docker** CONTAINERS	**Kubernetes** ORCHESTRATION	**Helm** PACKAGE MGR
ArgoCD GITOPS	**SonarQube** CODE QUALITY	**Vault** SECRETS	**Trivy** SECURITY
Prometheus MONITORING	**Grafana** DASHBOARDS	**ELK Stack** LOGGING	**OpenTelemetry** OBSERVABILITY
New Relic APM	**Istio** SERVICE MESH	**AI / AIOps** AUTOMATION	

CONTENTS

Table of Contents

14 weeks of structured, progressive learning across 13 modules.

DETAILED SYLLABUS

Course Modules

Deep-dive into every module. Each topic is covered with live demos and hands-on labs.

MODULE 01

Linux & Shell Scripting

Week 1

1.1 Linux Fundamentals

- Anatomy of Linux
- Linux Command Line Introduction
- Directory Structure in Linux

1.2 File & Directory Management

- ls, touch, rm, cp, mv commands
- cd, pwd, mkdir, rm -r, cp -r commands
- Rename directories using mv

1.3 Text Processing & Search

- vim editor
- grep (word search), awk (column filter), head & tail (line filters)
- find (find files)

1.4 System Utilities

- curl (download content)
- tar and unzip (extract compressed files)
- Pipes in the command line

1.5 Process & User Management

- ps and kill (process management)
- useradd (user management)
- sudo command & sudoers configuration

1.6 Software & Service Management

- dnf (package management)
- systemctl (service management)

1.7 Permissions & Networking

- chown, chgrp (ownership)
- chmod (file permissions)
- Network info commands

1.8 Shell Scripting

- Problems solved by shell scripting, use cases and limitations
- Types of shell scripting & why Bash is famous
- Writing, getting, and executing shell scripts
- Variables: declaring, accessing, command substitution, arithmetic substitution
- Special variables, taking input, single vs double quotes, exit status
- Functions: declaring, scope, return status
- Conditional statements: if, case
- Loops: while, for
- Input redirectors, SED editor, sourcing files

1.8 Networking for DevOps NEW

- TCP vs UDP, ports, sockets
- DNS resolution — how domains resolve to IPs
- HTTP/HTTPS, status codes (2xx, 3xx, 4xx, 5xx)
- SSL/TLS handshake & certificates
- CIDR notation & subnetting basics
- Load balancing concepts (L4 vs L7)
- Firewalls, iptables, network troubleshooting (ping, traceroute, netstat, curl, dig, nslookup)

MODULE 02

AWS Cloud Fundamentals

Week 2

Note: Advanced AWS services (EKS, KMS, WAF, FinOps) are covered contextually throughout the course in their respective modules.

2.1 Getting Started

- AWS Account Sign-Up
- Regions & Availability Zones

2.2 Networking & Security

- Public IP & Private IP
- Security Groups: Inbound & Outbound Rules
- VPC: Private and Public Subnets
- Route Tables, Internet Gateway, NAT Gateway
- Web/App/DB Subnets
- NACL, VPC Peering
- AWS Landing Zone Overview

2.3 Compute (EC2)

- EC2 Instance creation
- Connecting from Windows/Mac/Linux
- Spot Instances & Persistent Spot Instances

2.4 IAM

- IAM Introduction, user creation
- Managed & custom policies
- IAM Roles & OIDC Roles

2.5 Storage (S3)

- S3 Buckets: creation, encryption, versioning

2.6 Database Services

- DocumentDB: overview, cluster, subnet group, parameter group, connectivity
- Elasticache: overview, cluster, configuration
- RDS: MySQL cluster, subnet group, parameter group, connectivity
- Backup Policies

2.7 Messaging

- RabbitMQ in MQ Service
- Cluster creation, subnet group, parameter group, connectivity

2.8 Load Balancing & Auto Scaling

- Application Load Balancer (public & private)
- Single ALB for multiple backend apps
- Exposing private apps via Load Balancer
- Auto Scaling Groups with target groups
- Launch Templates

2.9 Security & Compliance

- AWS KMS encryption
- AWS ACM (Certificate Manager)
- AWS WAF & Shield

2.10 Container Services

- AWS ECR
- AWS EKS: Node Groups, Fargate, Node Autoscaling

2.11 Other Essential Services

- Route53
- Parameter Store & Secrets Manager

2.12 FinOps & Cost Optimization NEW

- AWS Cost Explorer & Billing Dashboard
- Right-sizing instances
- Cost allocation and budgets
- Resource tagging strategies
- Spot instance strategies

MODULE 03

Git, GitHub & GitHub Actions

Week 3

3.1 Version Control with Git

- Introduction to code repositories & Git
- Code editors & productivity
- Commit messages: importance & effective writing
- Git tags: what and when
- Git commit history
- GitOps: introduction & implementation
- Short-living vs Long-living branches
- Clone, modify, and push code to remote repositories
- Branch best practices & scenarios for branching
- Pulling code & pushing local changes
- Merging branches to master
- Application release strategy using Git repos
- Trunk Based Development (TBD)

3.2 Collaboration with GitHub

- Introduction to GitHub
- Creating & optimizing GitHub profile for job marketing
- Creating repositories
- Pull requests & peer reviews

3.3 GitHub Actions (CI/CD)

- Overview & basic concepts: Workflows, Events, Jobs, Steps, Runners, Actions
- Setting up repository for GitHub Actions
- Writing workflow files & YAML syntax
- Triggering workflows (push, pull_request, etc.)
- Environment variables and secrets
- Job configuration: dependencies and parallel execution
- Using official and community actions
- Managing workflow dependencies and artifacts
- Conditional executions
- Deploying to AWS and Kubernetes
- Integrating with external services
- Notifications and best practices

MODULE 04

Ansible — Configuration Management

Week 4

4.1 Introduction

- Problems of shell scripting
- History of configuration management
- Ansible vs Chef vs Puppet

4.2 Ansible Basics

- Installation & version history
- Modules vs Collections
- Inventory management best practices
- ADHOC commands & SSH credentials

4.3 Ansible Playbooks

- XML vs JSON vs YAML
- Plays, multi-play playbooks, tasks
- DEBUG module

4.4 Variables

- Play-level, task-level, inventory, CLI variables
- Variable precedence

4.5 Roles & Advanced Concepts

- Role directory structure & best practices
- files, meta, templates directories
- Ansible Galaxy
- Conditions & loops
- Unified pull/push playbook

4.6 Ansible Ecosystem

- Ansible Tower/AWX
- GUI open source tools

MODULE 05

Terraform — Infrastructure as Code + Packer

Week 5

5.1 Introduction to IaC

- Advantages, alternatives, why Terraform

5.2 Terraform Language & Lifecycle

- HCL introduction, code structure, file extensions
- Installation
- Lifecycle: init, plan, apply, destroy

5.3 Variables & Functions

- Output block, inbuilt functions
- Variable block: tfvars, auto tfvars
- Variable precedence

5.4 Resources & Providers

- Resource block: attributes & arguments
- Provider block, data sources
- Resource reference

5.5 Loops & Inputs

- count, for_each
- Best input methods

5.6 State Management

- State file best practices
- Remote state backends

5.7 Modules & Conditions

- Local & vendor modules
- Module best practices
- Locals, conditions

5.8 Project Structure & Testing

- Versioning, multi-environment structure
- Best practices for real-time environments
- Terraform test cases

5.9 Packer for AMI Building NEW

- Introduction to Packer
- Packer templates for AWS AMIs
- Integration with Terraform

MODULE 06

Docker — Containerization

Week 6

6.1 Container Fundamentals

- Physical Server vs Virtual Server vs Container
- Container advantages & adoption
- Container management software types

6.2 Docker Introduction

- Docker architecture, ecosystem history
- Container runtimes
- Public Docker images

6.3 Docker Images & Dockerfiles

- Dockerfile instructions: FROM, RUN, COPY, ADD, CMD, ENTRYPOINT
- ADD vs COPY, CMD vs ENTRYPOINT
- Building images, image layers
- Multi-stage builds NEW

6.4 Docker Registries

- Public vs private registries
- Pushing to registry
- ECR introduction & pushing to ECR
- Building images in pipelines

6.5 Running Containers

- Dynamic & static ports
- Volume mapping (single & multiple)
- Health checks
- Container inspection & management

MODULE 07

Kubernetes + Helm + Kustomize + ISTIO

Week 7–8

7.1 Kubernetes Fundamentals

- Orchestration introduction & importance
- Kubernetes vs Docker
- Pod advantages
- Architecture overview
- kubeconfig, Minikube setup
- Kubernetes YAML

7.2 Core Objects

- Pods: single/multi-container, labels, annotations, env vars
- ConfigMaps & Secrets
- ReplicaSet & Deployment
- Services: ClusterIP, LoadBalancer, NodePort

7.3 Kubernetes on AWS (EKS)

- EKS introduction & Terraform configuration
- OIDC, Node Groups, kubeconfig

7.4 Advanced Concepts

- Namespaces
- Parameter Store integration
- Service Accounts & IAM
- Load Balancer exposure from EKS
- Nginx Ingress Controller
- Prometheus & Grafana on EKS

7.5 Karpenter — Node Autoscaling NEW

- Karpenter vs Cluster Autoscaler
- Provisioner configuration
- Node consolidation strategies

7.6 Resource Management NEW

- Requests & Limits
- Horizontal Pod Autoscaler (HPA)
- Vertical Pod Autoscaler (VPA)
- Pod Disruption Budgets

7.7 Kubernetes Gateway API NEW

- Gateway API vs Ingress
- HTTPRoute, GRPCRoute
- Traffic splitting & canary patterns

7.8 Helm Charts

- What is Helm? Architecture
- Chart structure: Chart.yaml, values.yaml, templates
- Creating charts from scratch
- Installing, upgrading, rolling back releases
- Helm repositories & best practices

7.9 Kustomize NEW

- Kustomize vs Helm
- Overlays for multi-environment management
- Integration with ArgoCD

7.10 Service Mesh — ISTIO & Cilium

- Why service mesh for microservices
- ISTIO sidecar injection (Envoy Proxy)
- TLS configuration, traffic management, observability
- Cilium — eBPF-based service mesh (industry trend) NEW
- ISTIO vs Cilium vs Linkerd comparison

MODULE 08

Monitoring & Observability

Week 9

8.1 Prometheus

- Monitoring & alerting importance
- Exporters: Node Exporter, cAdvisor
- PromQL basics
- Service discovery methods
- Prometheus architecture: scrape, store, query
- Target configuration
- Alertmanager configuration

8.2 Grafana

- Data visualization importance
- Building dashboards & panels
- Templating with variables
- Configuring data sources
- Visualization types
- Alerting setup

8.3 ELK Stack

- Centralized logging need
- Logstash: inputs, filters, outputs
- Use cases: troubleshooting, security analysis, performance
- Elasticsearch: index, document, shard, replica
- Kibana: discover, visualizations, dashboards

8.4 OpenTelemetry (OTEL) NEW

- Introduction to OpenTelemetry standard
- OTEL Collector deployment
- Integration with Prometheus & Grafana
- Traces, Metrics, and Logs unified
- Instrumenting applications

8.5 NewRelic

- APM introduction
- Agent integration
- Troubleshooting with NewRelic
- Key features: APM, infra monitoring, log management
- Custom dashboards & alerts

8.6 Fluent Bit / Fluentd NEW

- Modern log collection for Kubernetes
- Fluent Bit vs Logstash comparison
- Deploying as DaemonSet on EKS

8.7 SRE Practices NEW

- SLIs, SLOs, and Error Budgets
- Incident management & on-call
- Post-mortems & blameless culture
- Toil reduction strategies

MODULE 09

GitOps & CI/CD — ArgoCD

Week 10

9.1 ArgoCD

- What is GitOps? Architecture
- Installing ArgoCD in EKS
- Configuring ArgoCD
- Projects, YAML code, sync policies
- Best practices

9.2 Advanced CI/CD Patterns NEW

- Blue-green deployments
- Canary deployments
- Progressive delivery
- Feature flags overview

MODULE 10

Security & Quality

Week 11

10.1 SonarQube

- Continuous integration quality gates
- Installing SonarQube
- Sonar client setup, pipeline integration
- Bugs, vulnerabilities, code smells, coverage, duplication, debt
- Quality gates & profiles
- Pipeline failure on quality gate failure

10.2 HashiCorp Vault

- Secrets management use cases
- Vault CLI & setup
- KV Secrets, Transit Backend, Dynamic Secrets
- Authentication & audit logging
- Integration with projects, CI, CD, Kubernetes

10.3 Container & Infrastructure Security

- Trivy: container image scanning, K8s cluster scanning
- Lynis: Linux OS hardening & security auditing

10.4 Policy as Code — OPA/Gatekeeper NEW

- Introduction to Open Policy Agent
- Gatekeeper for Kubernetes
- Writing Rego policies
- Enforcing policies in CI/CD and K8s

10.5 Software Supply Chain Security NEW

- SBOM (Software Bill of Materials) generation
- Image signing with Cosign/Sigstore
- Dependency vulnerability scanning
- SLSA framework overview

10.6 SAST/DAST Concepts NEW

- Static Application Security Testing
- Dynamic Application Security Testing
- Integration in CI/CD pipelines

MODULE 11

Python for DevOps

Week 12

11.1 Python Fundamentals

- History, versions (V2 vs V3), use cases
- Indentation, variables, data types
- Operators and expressions

11.2 Control Flow

- Conditions (if/elif/else)
- Loops (for, while), comprehensions

11.3 Functions

- Parameters, arguments, return values
- Scope and lifetime, doc strings, annotations
- Recursive functions

11.4 Data Structures

- Lists, Tuples, Dictionaries, Sets

11.5 Strings & Regular Expressions

- String manipulation, regular expressions

11.6 Modules for DevOps

- OS, Platform, Subprocess, Sys, Psutil modules
- Requests, Logging, Paramiko, Boto3 modules
- Running Lambda with Python code

MODULE 12

AI for DevOps & AIOps ENTIRELY NEW

Week 13

12.1 AI-Assisted DevOps Workflows

- GitHub Copilot for Infrastructure as Code
- AI-assisted Terraform, Ansible, and K8s manifest generation
- Prompt engineering for DevOps automation
- AI-powered code review and testing

12.2 AIOps — Intelligent Operations

- Introduction to AIOps concepts
- AI-driven anomaly detection in monitoring
- Predictive alerting and auto-remediation
- Noise reduction in alert management
- ChatOps with AI assistants

12.3 LLM Infrastructure for DevOps

- Overview of deploying AI/ML models on Kubernetes
- GPU node management on EKS
- Model serving concepts (vLLM, TGI overview)
- Resource management for AI workloads

12.4 MLOps Pipeline Fundamentals

- CI/CD for ML models overview
- Model registries and versioning
- A/B testing for model deployments
- Monitoring ML model performance

MODULE 13

Capstone Project & Interview Prep

Week 14

13.1 End-to-End Project Implementation

- Complete microservices deployment on AWS
- Full CI/CD pipeline with security gates
- Monitoring and observability setup
- GitOps-based deployment

13.2 Real-World Troubleshooting Scenarios NEW

- Pod in CrashLoopBackOff — systematic debugging approach
- Terraform apply fails — state lock, drift, dependency issues
- CI/CD pipeline failure — build, test, deploy stage debugging
- Production CPU/Memory spike — identifying & resolving root cause
- 503 Service Unavailable — tracing from ALB to pod
- Docker image build failure — layer caching, multi-stage issues
- Kubernetes node NotReady — kubelet, resource, networking diagnosis
- Secrets leaked in Git — remediation & prevention with Vault
- ArgoCD out-of-sync — drift detection & resolution
- Prometheus alerts firing false positives — tuning thresholds & SLOs

13.3 Interview Preparation

- DevOps scenario-based questions
- Architecture design discussions
- Mock interviews with real-time feedback
- Resume review & ATS optimization

13.4 Certification Roadmap

- AWS Solutions Architect Associate (SAA-C03) — syllabus covers 80%+ topics
- Certified Kubernetes Administrator (CKA) — syllabus covers 85%+ topics
- HashiCorp Terraform Associate — syllabus covers 90%+ topics
- Guidance on exam registration, study resources & preparation strategy

LearnDevOpsOnline

Curriculum aligned with roadmap.sh/devops | Updated for 2026