

DevOps, Cloud and Engineering Practices

Duration: 5 Days (8 hrs/day) = **40 Hours**

Pre-requisite:

- Basic understanding of software development concepts
- Familiarity with any programming language and basic Linux concepts is recommended

Course Objective

This course provides a comprehensive understanding of modern **DevOps, Cloud, and Engineering practices** required to build, deploy, and operate scalable applications. Participants will learn how to collaborate using Git, automate software delivery with CI/CD pipelines, containerize applications using Docker, deploy and manage workloads on Kubernetes, and apply observability, cloud, Agile, and security best practices. The course emphasizes real-world engineering workflows and hands-on learning to help teams deliver software faster, more reliably, and securely.

DC: Koenig-DC + Azure

Module 1: Git Strategies & Collaboration

- Git as a collaboration and release-management tool
- Centralized vs distributed Git workflows
- Branching strategies: Git Flow and trunk-based development
- Pull requests and code reviews
- Commit hygiene and versioning best practices
- Release tagging and version management
- Merge conflict handling and resolution

Module 2: CI/CD Pipelines

- CI/CD principles and benefits
 - Pipeline architecture and stages
 - Automated build and test execution
 - Artifact creation and management
 - Failure handling and rollback strategies
 - Environment promotion (Dev, QA, Prod)
-

Module 3: Docker & Containerization

- Containerization fundamentals
 - Docker architecture and core components
 - Writing Dockerfiles and best practices
 - Multi-stage Docker builds
 - Image optimization techniques
 - Environment variables and secrets in containers
 - Container networking basics
-

Module 4: Kubernetes Basics

- Kubernetes overview and use cases
 - Kubernetes architecture and components
 - Pods and container lifecycle
 - Deployments and rolling update strategies
 - Services and service types
 - ConfigMaps and application configuration
 - Scaling and orchestration fundamentals
-

Module 5: Logging & Monitoring

- Observability fundamentals
 - Logging, metrics, and monitoring concepts
 - Structured logging principles
 - Log levels and best practices
 - Correlation IDs in distributed systems
 - Monitoring dashboards and alerting basics
-

Module 6: Cloud Fundamentals (AWS / Azure)

- Cloud computing concepts and service models
 - Core cloud services: compute, storage, networking
 - Virtual networks and security boundaries
 - Environment isolation strategies
 - Cost-awareness and cost optimization basics
 - Cloud architecture patterns
-

Module 7: Agile & Engineering Practices

- Agile values and principles
- Scrum and Kanban frameworks
- Backlog management and refinement
- Sprint planning and execution
- Sprint reviews and retrospectives
- Technical debt management

Module 8: OWASP & Application Security

- Security in the software development lifecycle
- OWASP Top 10 overview
- Input validation vulnerabilities
- Authentication and authorization flaws
- Secure coding practices
- Application security testing basics