

Container

e-Learning Course

Dive into the world of containerization and transform your development workflow!

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COURSE MODULES

Module 1: Introduction to Containerization & Orchestration

- What are Containers? (Docker Overview)
- Limitations of Standalone Containers
- Introduction to Container Orchestration
- Key Orchestration Tools (Kubernetes, Docker Swarm, Nomad, OpenShift)

Module 2: Kubernetes Fundamentals

- Kubernetes Architecture (Master, Nodes, API Server, etcd, Scheduler)
- Key Kubernetes Components
 - Pods
 - Deployments
 - Services
 - Namespaces
- YAML Configuration Basics

Module 3: Deploying Applications on Kubernetes

- Setting Up a Kubernetes Cluster (Minikube, KIND, or)
- Scaling Applications

Module 4: Kubernetes Networking & Services

- Cluster Networking Concepts
- Service Types (ClusterIP, NodePort, LoadBalancer, Ingress)
- DNS in Kubernetes
- Configuring Ingress Controllers

Module 5: Storage & Persistent Data in Kubernetes

- Persistent Volumes (PVs) and Persistent Volume Claims (PVCs)
- Storage Classes & Dynamic Provisioning
- StatefulSets for Stateful Applications

Module 6: Kubernetes Security

- Role-Based Access Control (RBAC)
- Network Policies
- Secrets & ConfigMaps
- Security Best Practices

Module 7: Monitoring & Logging in Kubernetes

- Using Prometheus & Grafana for Monitoring
- Logging with Fluentd, ELK, or Loki
- Debugging & Troubleshooting

Module 8: Helm & Package Management

- Introduction to Helm
- Writing Helm Charts
- Managing Applications with Helm

Module 9: CI/CD with Kubernetes

- Kubernetes & DevOps
- Integrating Jenkins, GitHub Actions, or ArgoCD
- Blue-Green Deployments & Canary Releases

Module 10: Advanced Kubernetes & Cloud-Native Tools

- Service Mesh (Istio, Linkerd)
- Serverless with Knative
- Kubernetes Operators
- Multi-Cluster Orchestration

Module 11: Hands-on Projects & Real-World Scenarios

- Deploying a Scalable Web App
- Running a Database Cluster
- Implementing CI/CD in a Kubernetes Environment

