



Information Technology

# **Certified Kubernetes Application Developer (CKAD) Complete Guide**

# Course Introduction

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## **Certified Kubernetes Application Developer (CKAD) Complete Guide**

Welcome to "Certified Kubernetes Application Developer (CKAD) Complete Guide," a five-day course designed to prepare professionals for the CKAD exam. This course focuses on Kubernetes application development, covering topics such as pod design, configuration, observability, and application lifecycle management. By mastering these skills, you will be equipped to design, build, and deploy cloud-native applications on Kubernetes.

Through hands-on labs and real-world scenarios, you will gain practical experience developing and deploying applications in Kubernetes clusters. You will explore key topics such as pod scheduling, networking, and storage, ensuring that you are well-prepared to handle real-world challenges. Additionally, the course emphasizes best practices for designing scalable, resilient, and secure Kubernetes environments, making it ideal for both beginners and experienced practitioners.

By the end of this course, you will have the skills and confidence to pass the CKAD exam while also contributing effectively to your organization's Kubernetes initiatives. Whether you are a developer, DevOps engineer, or cloud architect, this course equips you with the expertise needed to excel in Kubernetes-based projects and drive innovation within your team.

## Target Audience

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This course is ideal for developers, DevOps engineers, and cloud architects involved in Kubernetes-based projects. It is particularly beneficial for professionals preparing for the CKAD exam or those looking to deepen their Kubernetes expertise.

# Learning Objectives

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- Understand Kubernetes application development principles.
- Design and deploy cloud-native applications on Kubernetes.
- Configure networking, storage, and security policies.
- Troubleshoot common Kubernetes issues.
- Prepare for the CKAD certification exam.

## Course Outline

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- **Day 01**

### **Foundations of Kubernetes Application Development**

#### **Introduction to Kubernetes Application Development**

- Definition and importance of cloud-native applications.
- Key components: Pods, Deployments, Services, and ConfigMaps.

### **Setting Up Kubernetes**

- Installing Kubernetes locally using Minikube.
- Exploring managed Kubernetes services (GKE, EKS, AKS).

### **Interactive Session**

- Hands-on exercise: Deploy a simple application on Kubernetes.

- **Day 02**

### **Pod Design and Configuration**

- Understanding Pod Design
  - Single-container vs. multi-container pods.
  - Configuring environment variables and secrets.

## **Managing Configurations**

- Using ConfigMaps and Secrets for application configuration.
- Injecting configurations into pods.

## **Practical Exercise**

- Deploy an application with multiple containers and configurations.

### **• Day 03**

## **Networking and Observability**

### **Kubernetes Networking**

- Service types: ClusterIP, NodePort, and LoadBalancer.
- Ingress controllers for external access.

### **Observability**

- Using logs, metrics, and tracing for application monitoring.
- Tools like Prometheus and Grafana for observability.

## **Role Play**

- Set up an Ingress controller and monitor application performance.

### **• Day 04**

## **Storage and Security**

### **Persistent Storage**

- Configuring PersistentVolumes (PVs) and PersistentVolumeClaims (PVCs).
- Using storage classes for dynamic provisioning.

## **Securing Applications**

- Implementing Role-Based Access Control (RBAC).
- Securing pods with security contexts and network policies.

**Group Activity**

- Secure an application and configure persistent storage.
- **Day 05**

**Advanced Topics and Exam Preparation**

**Advanced Deployment Strategies**

- Blue-Green deployments and canary releases.
- Autoscaling with Horizontal Pod Autoscaler (HPA).

**Troubleshooting**

- Debugging pods, nodes, and services.
- Common Kubernetes errors and resolutions.

**Final Project Presentation: Comprehensive Kubernetes Application Deployment**

- Closing Remarks

**Confirmed Sessions**

FROM	TO	DURATION	FEES	LOCATION
May 19, 2025	May 23, 2025	5 days	4250.00 \$	UAE - Dubai
July 27, 2025	July 31, 2025	5 days	2150.00 \$	Virtual - Online
Nov. 16, 2025	Nov. 20, 2025	5 days	4250.00 \$	KSA - Riyadh