Course Outline:

1. **Kubernetes High Availability**

   o Load balance kubectl commands across an HA Kubernetes cluster

   o Review the basic architecture of a Kubernetes cluster

   o Install a well-validated HA Kubernetes cluster on a collection of hosts

2. **Managing Application Deployment**

   o Review how pods are scheduled on worker nodes

   o Examine the node selector

   o Discuss implementing the impact of taints and tolerations for Kubernetes workloads

   o Review both pod and node affinity and anti-affinity

3. **Releasing Application Updates**

   o Discuss releasing updates to applications running on the Kubernetes platform

   o Explore native tooling for updating application

   o Examine how Helm manages updating applications

4. **Application High Availability**

   o Review the architecture required to achieve high availability for applications

   o Discuss best practices for using liveness and readiness probes

   o Explore Kubernetes auto-scaling of applications

o Discuss how to prioritizing Kubernetes workloads

5. **Routing Network Traffic**

o Discuss network routing options within Kubernetes

o Discuss the benefits of the Ingress controller and object

o Examine the Ingress object and controller pattern

6. **Provisioning Storage**

o Review available storage options for applications

o Discuss constraints of persistent storage in a standard Kubernetes cluster deployment

o Examine the storageClass object

7. **Kube Security: Implementing RBAC**

o Discuss RBAC implementation within Kubernetes

o Examine Kubernetes RBAC components

o Review Auditing within Kubernetes

o Determine how to enable Auditing within a Kubernetes cluster

8. **Kubernetes Network Security**

o Review the the Kubernetes Networking Model

o Discuss how Network Security is managed within the Kubernetes cluster

o Examine managing network security with native and non-native Kubernetes tooling

o Explain the native method of creating Network Policies

9. **Securing an Application Workload**

   - o Identify security mechanisms available to security between containers, pods, and the Kubernetes cluster

   - o Discuss strategies for enabling flexibility within security policy while maintaining security compliance

   - o Examine how to enable Pod Security Policies

10. **Multi-Tenancy in Kubernetes**

   - o Discuss multi-tenancy in a Kubernetes cluster

   - o Examine native Kubernetes objects used for enabling multi-tenancy capability

   - o Discuss multi-tenancy methods for Kubernetes