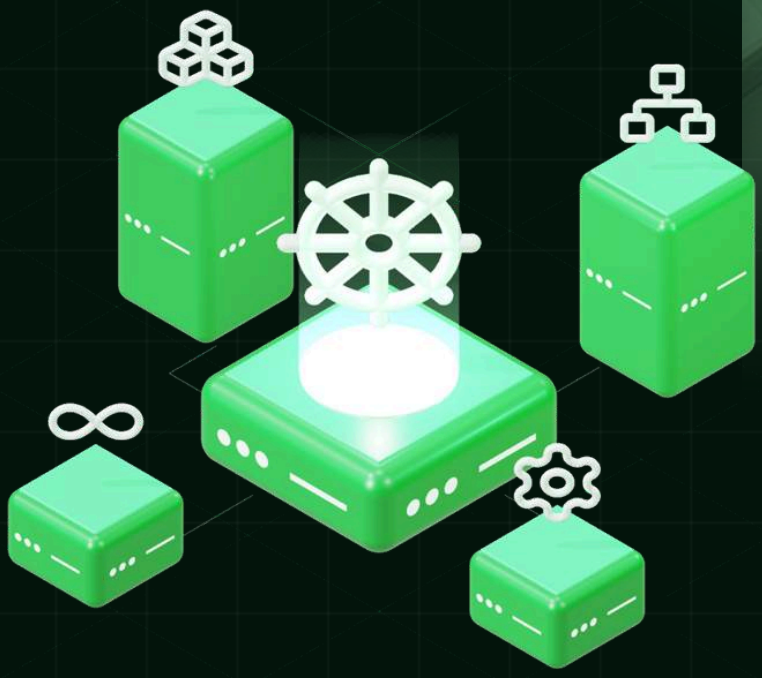
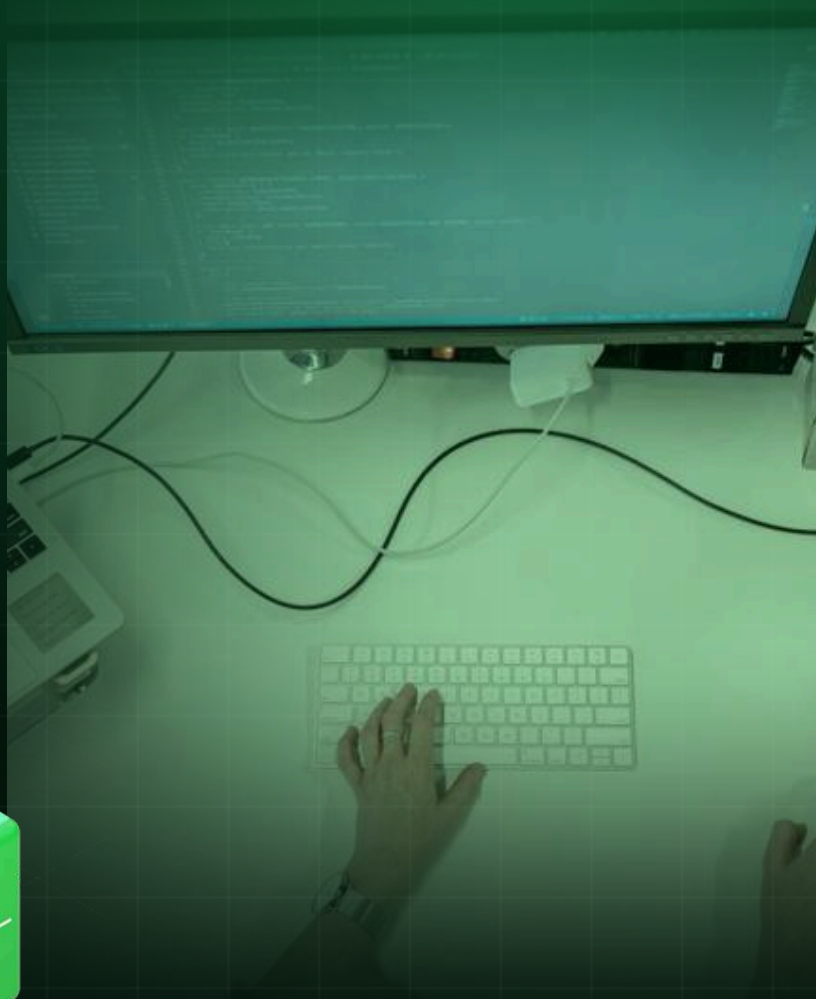
samcommunity.in

✦ DEVOPS & PLATFORM ENGINEERING · ADVANCED

Helm & Kubernetes Advanced

Production-grade Kubernetes.





56	8	SAM-HELMK8S
HOURS	MODULES	CERTIFICATION

✦ INSIDE THIS BROCHURE

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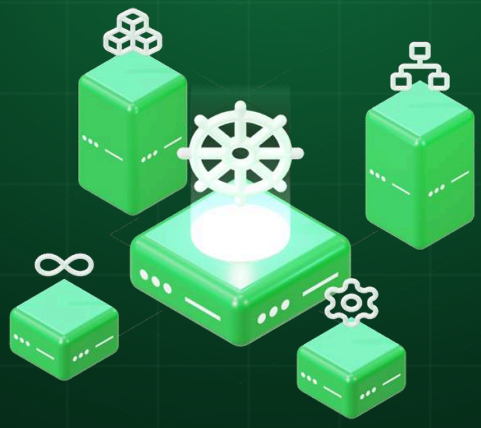


AT A GLANCE

Level	Advanced
Duration	56 Hours
Modules	8
Certificate	SAM-HELMK8S

✦ PROGRAM OVERVIEW

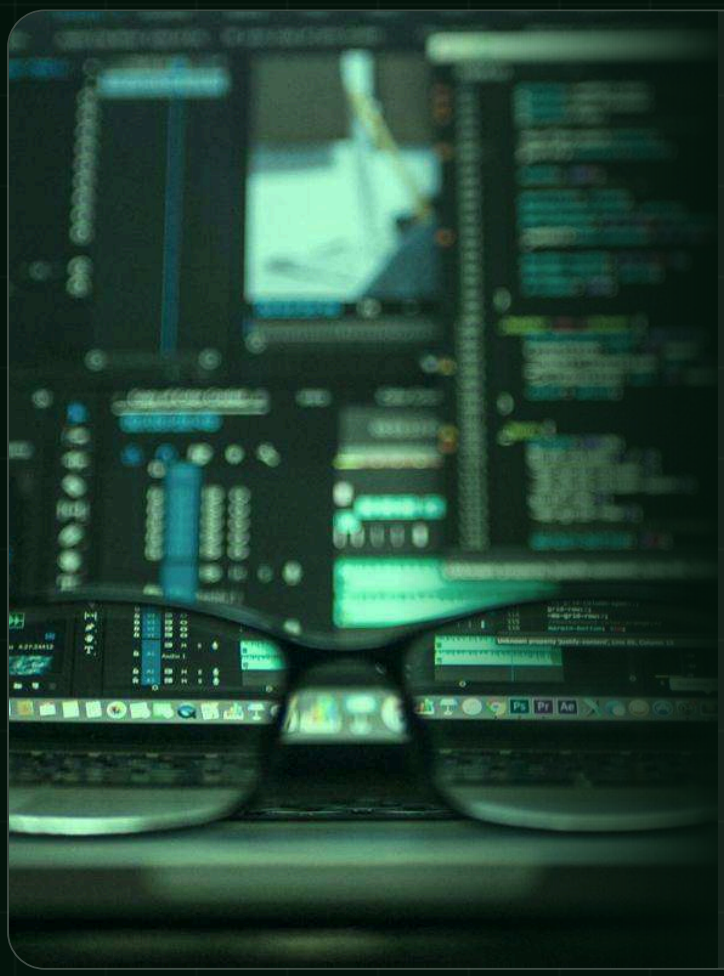
Production-grade Kubernetes.



Package apps with Helm and master advanced Kubernetes — scheduling, operators, security and scaling.

Running Kubernetes in production demands more than basic deployments: teams must package applications cleanly, schedule workloads intelligently, scale efficiently, extend the platform and keep clusters secure. This advanced program covers Helm chart development in depth, advanced scheduling and autoscaling, operators and CRDs, service networking, cluster hardening and upgrades, preparing you for production work and CKS-level security topics.

LEVEL	DURATION	CERTIFICATION	DELIVERY
Advanced	56 Hours	SAM-HELMK8S	Instructor-led · Live virtual · Blended



✦ WHAT YOU'LL PRACTISE

Build and manage Helm charts	01
Use advanced scheduling and autoscaling	02
Work with operators and CRDs	03
Harden production clusters	04

✦ WHO IT'S FOR

Built for people ready to grow.

01

Developers & sysadmins

DevOps, Linux and Git foundations

02

DevOps engineers

Docker, Kubernetes, Terraform, CI/CD

03

Platform teams

GitOps, Helm, Backstage, observability

04

Reliability leads

SRE practices and DevSecOps

PREREQUISITES

Solid Kubernetes experience with core workloads	01
Comfortable with kubectl and YAML	02
Docker and Linux administration skills	03

ROLES YOU CAN TARGET

- Senior DevOps Engineer ↗
- Kubernetes Engineer ↗
- Platform Engineer ↗
- Site Reliability Engineer ↗
- Cloud Infrastructure Engineer ↗

✦ LEARNING OUTCOMES

What you'll be able to do.

01 Develop, test and publish production-grade Helm charts

02 Apply advanced scheduling with affinity, taints and priorities

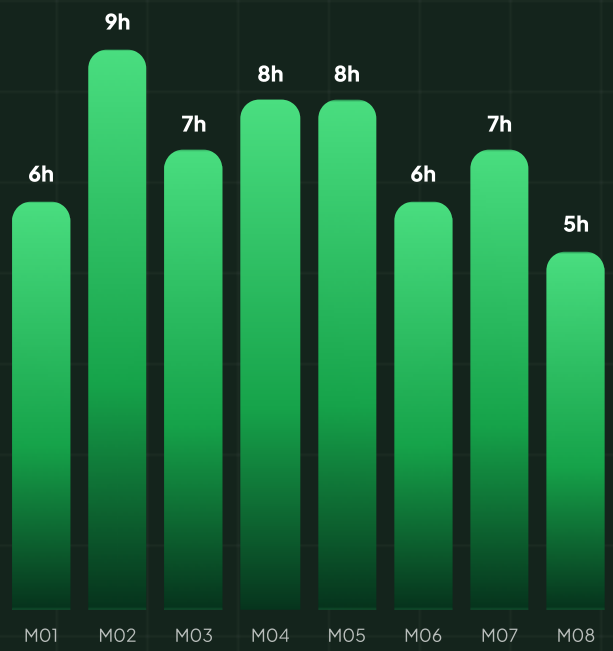
03 Configure HPA, VPA, KEDA and cluster node autoscaling

04 Extend Kubernetes using CRDs, controllers and operators

05 Harden clusters using RBAC, admission policies and benchmarks

06 Plan and execute safe cluster upgrades and backups

HOURS PER MODULE



✦ PROGRAM RUNWAY

Your journey, module by module.

8
MODULES · 56 HRS

01	**Helm Fundamentals Deep Dive** Helm architecture and releases, Chart structure and Chart.yaml, Values files and overrides	6 hrs
02	**Advanced Helm Chart Development** Go templating and Sprig functions, Helpers and named templates, Chart dependencies and subcharts	9 hrs
03	**Advanced Scheduling** Node and pod affinity, Taints and tolerations, Topology spread constraints	7 hrs
04	**Autoscaling and Resource Management** Requests, limits and QoS classes, HPA with custom metrics, Vertical Pod Autoscaler	8 hrs
05	**Operators and CRDs** Custom Resource Definitions, Controller reconciliation pattern, Operator Framework and Kubebuilder	8 hrs
06	**Advanced Networking and Service Mesh** CNI internals with Cilium, Advanced network policies, Gateway API in depth	6 hrs
07	**Cluster Security Hardening** RBAC least privilege, Pod Security admission, Policy engines Kyverno and Gatekeeper	7 hrs
08	**Production Operations** Cluster upgrade strategies, Backup and restore with Velero, Multi-cluster considerations	5 hrs
★	**Capstone · Hardened Production Kubernetes Platform** Assessment, capstone review and certification	

✦ DETAILED CURRICULUM

The syllabus.

Modules 01–03

MODULE 01

Helm Fundamentals Deep Dive

6 hours

Hands-on lab
Install, upgrade and roll back a release using layered values files.

TOPICS COVERED

- Helm architecture and releases
- Chart structure and Chart.yaml
- Values files and overrides
- Install, upgrade and rollback
- Chart repositories and OCI registries

Helm

MODULE 02

Advanced Helm Chart Development

9 hours

Hands-on lab
Build a reusable chart with subcharts, schema validation and unit tests.

TOPICS COVERED

- Go templating and Sprig functions
- Helpers and named templates
- Chart dependencies and subcharts
- Hooks and tests
- values.schema.json validation
- helm lint and helm-unittest

Helm

MODULE 03

Advanced Scheduling

7 hours

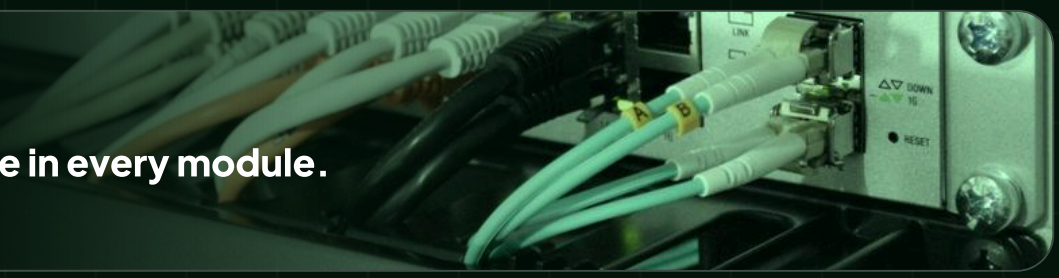
Hands-on lab
Spread a workload across zones and reserve nodes using taints.

TOPICS COVERED

- Node and pod affinity
- Taints and tolerations
- Topology spread constraints
- Priority classes and preemption
- Custom scheduling profiles

LEARN BY DOING

8 guided labs, one in every module.



✦ DETAILED CURRICULUM

Syllabus, continued.

Modules 04–06

MODULE 04

Autoscaling and Resource Management

8 hours

Hands-on lab
Scale a queue consumer with KEDA and observe node autoscaling.

TOPICS COVERED

- Requests, limits and QoS classes
- HPA with custom metrics
- Vertical Pod Autoscaler
- KEDA event-driven scaling
- Cluster Autoscaler and Karpenter

MODULE 05

Operators and CRDs

8 hours

Hands-on lab
Create a CRD and deploy a simple operator built with Kubebuilder.

TOPICS COVERED

- Custom Resource Definitions
- Controller reconciliation pattern
- Operator Framework and Kubebuilder
- Installing community operators
- Operator capability levels

MODULE 06

Advanced Networking and Service Mesh

6 hours

Hands-on lab
Enable mTLS and traffic splitting between service versions using Istio.

TOPICS COVERED

- CNI internals with Cilium
- Advanced network policies
- Gateway API in depth
- Service mesh with Istio or Linkerd
- mTLS between services

LEARN BY DOING

8 guided labs, one in every module.

✦ DETAILED CURRICULUM

Syllabus, continued.

Modules 07–08

MODULE 07

Cluster Security Hardening

7 hours

Hands-on lab
Harden a cluster against kube-bench findings and enforce Kyverno policies.

TOPICS COVERED

- RBAC least privilege
- Pod Security admission
- Policy engines Kyverno and Gatekeeper
- CIS benchmarks with kube-bench
- Audit logging
- Image provenance enforcement

MODULE 08

Production Operations

5 hours

Hands-on lab
Back up a namespace with Velero and restore it to another cluster.

TOPICS COVERED

- Cluster upgrade strategies
- Backup and restore with Velero
- Multi-cluster considerations
- Cost optimisation practices
- Day-2 operations runbooks



CAPSTONE

Hardened Production Kubernetes Platform

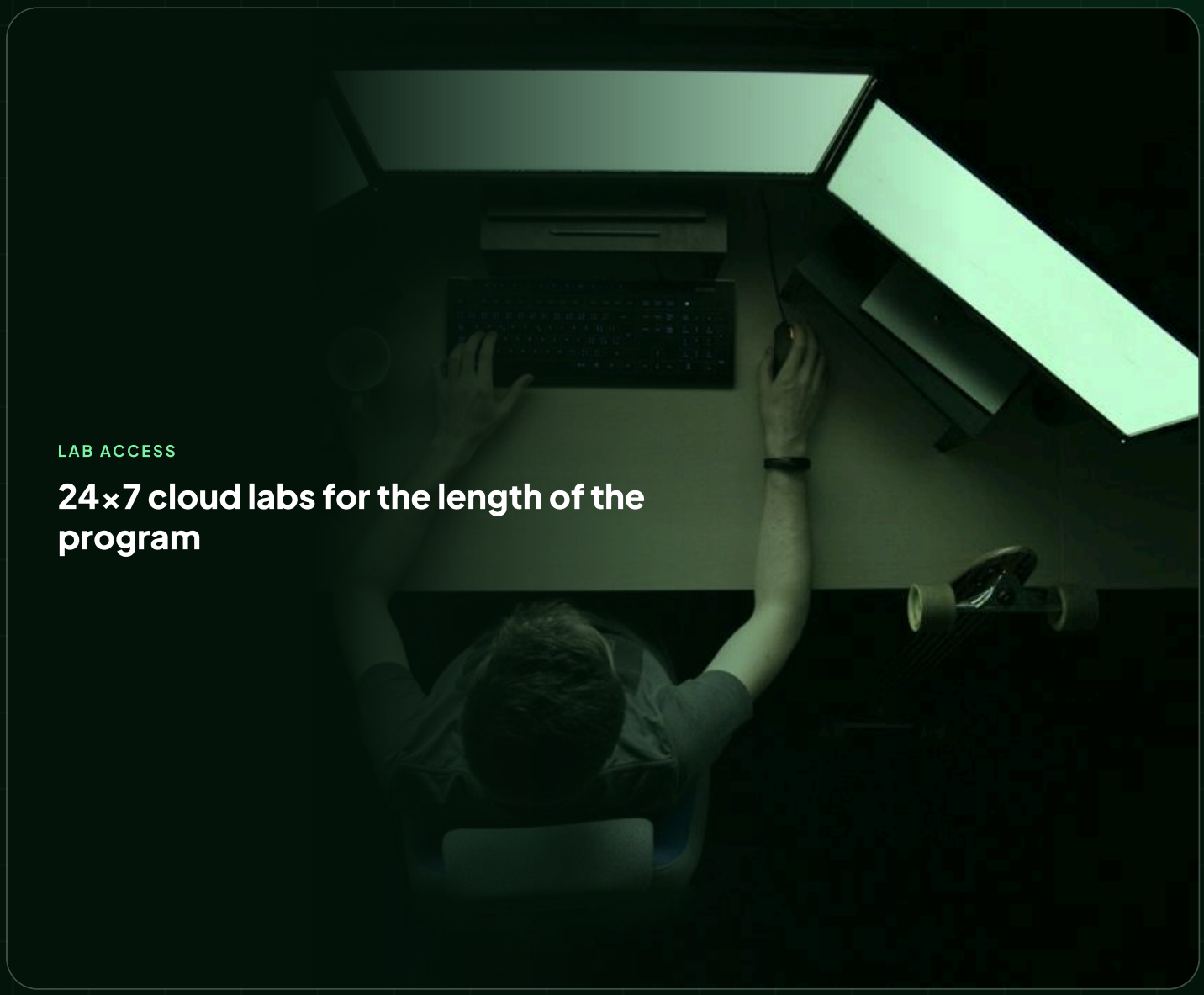
✦ YOUR STACK

Tools you'll build with.

Real platforms and frameworks — the same stack modern teams ship with, practised in cloud-hosted labs.

Helm
Kubernetes packaging

Kubernetes
Container orchestration



LAB ACCESS

24×7 cloud labs for the length of the program

✦ HANDS-ON WORK

Projects that prove you can do it.

01

Production Helm Chart Library

Develop a tested, schema-validated Helm chart with subcharts and hooks, published to an OCI registry with semantic versions.

02

Event-Driven Autoscaling Setup

Configure HPA, VPA and KEDA for different workloads and demonstrate scaling behaviour with node autoscaling under load.

03

Custom Operator Build

Build a Kubebuilder operator that manages a custom resource and reconciles dependent Deployments, Services and ConfigMaps automatically.

CAPSTONE PROJECT

Hardened Production Kubernetes Platform

Deliver a production-style cluster setup: applications packaged as tested Helm charts, advanced scheduling and autoscaling, an operator-managed component, service mesh mTLS, admission policies, CIS hardening, Velero backups and a documented upgrade plan.

Real-world scenario · Mentor review · Portfolio ready



CERTIFICATION

SAM-HELMK8S

Awarded on successful completion of the program assessments.

- MCQ assessments
- Practical lab evaluation
- Project & capstone review
- Final presentation



✦ HOW YOU LEARN

The SAM Learning Framework™

PHASE 01

S

Scenario

Real-world attack and use-case scenarios open every module.

PHASE 02

A

Apply

Hands-on lab work, CTF challenges and live projects.

PHASE 03

M

Master

Assessment, peer review and certification prep.

PHASE 04

M

Mentor

Post-program career guidance and support.

DELIVERY MODELS

- Instructor-Led (ILT)
- Virtual Instructor-Led
- Self-Paced Online
- E-Learning Licensing
- Blended Learning
- Corporate Onsite
- Bootcamp Intensive
- Hackathon / CTF
- Mentorship

✦ LEARNING PATH · DEVOPS & PLATFORM ENGINEERING

Where this program fits.

Beginner	Intermediate	Advanced	Expert
3 programs	6 programs	You are here	1 programs

BEFORE THIS

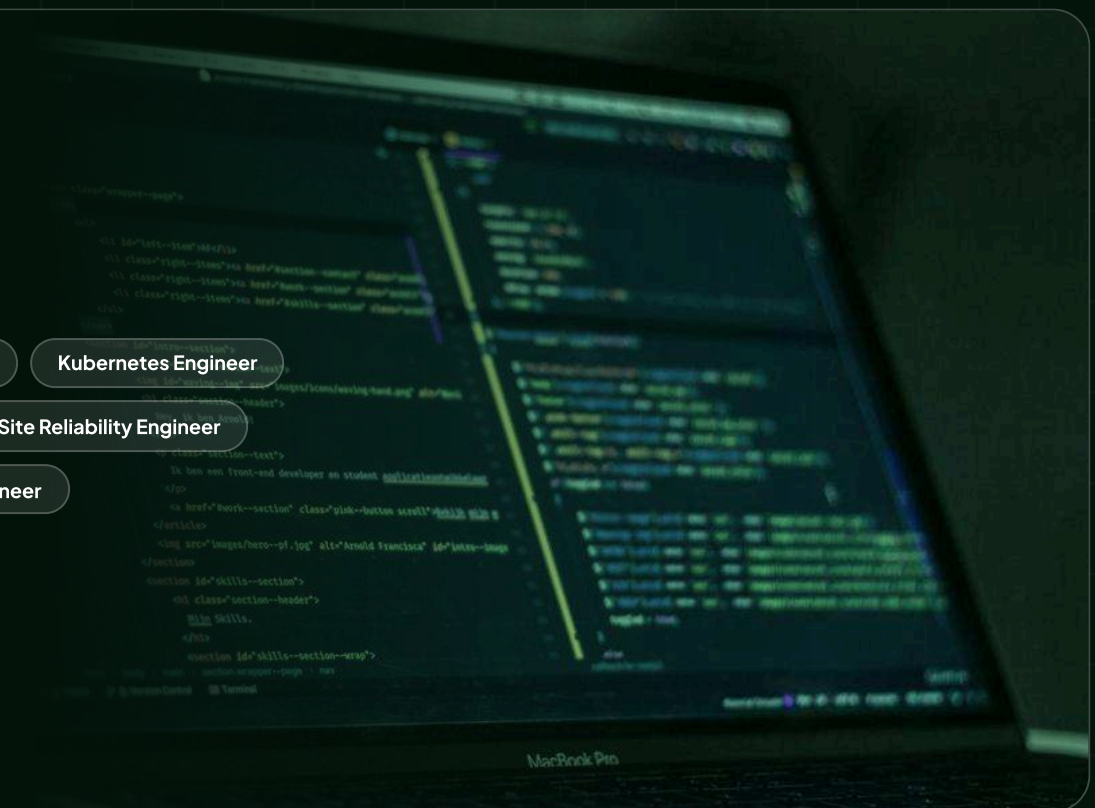
Docker Mastery	48 Hours
Kubernetes — From Zero to Hero	80 Hours
Terraform & Infrastructure as Code	56 Hours
Jenkins CI/CD Pipelines	48 Hours

UP NEXT

SRE — Site Reliability Engineering	80 Hours

CAREER ROLES

- Senior DevOps Engineer
- Kubernetes Engineer
- Platform Engineer
- Site Reliability Engineer
- Cloud Infrastructure Engineer



✦ FAQS

Questions, answered.

Q01

Do I need prior experience to join?

This is an advanced program. You should be comfortable deploying, exposing and troubleshooting workloads on Kubernetes. Completing Kubernetes From Zero to Hero, or holding equivalent hands-on experience, is strongly recommended before joining.

Q02

How is the program delivered and scheduled?

Sessions are instructor-led and run as live virtual classes or in a blended format. Batch timings, including weekday and weekend options, are confirmed at enrolment, and session recordings and notes support revision between classes.

Q03

What certification will I receive?

Learners who complete the required labs, projects and final assessments receive the Samcommunity Academy SAM-HELMK8S certificate. It records the skills you have demonstrated during the program and is awarded only after assessments are passed.

Q04

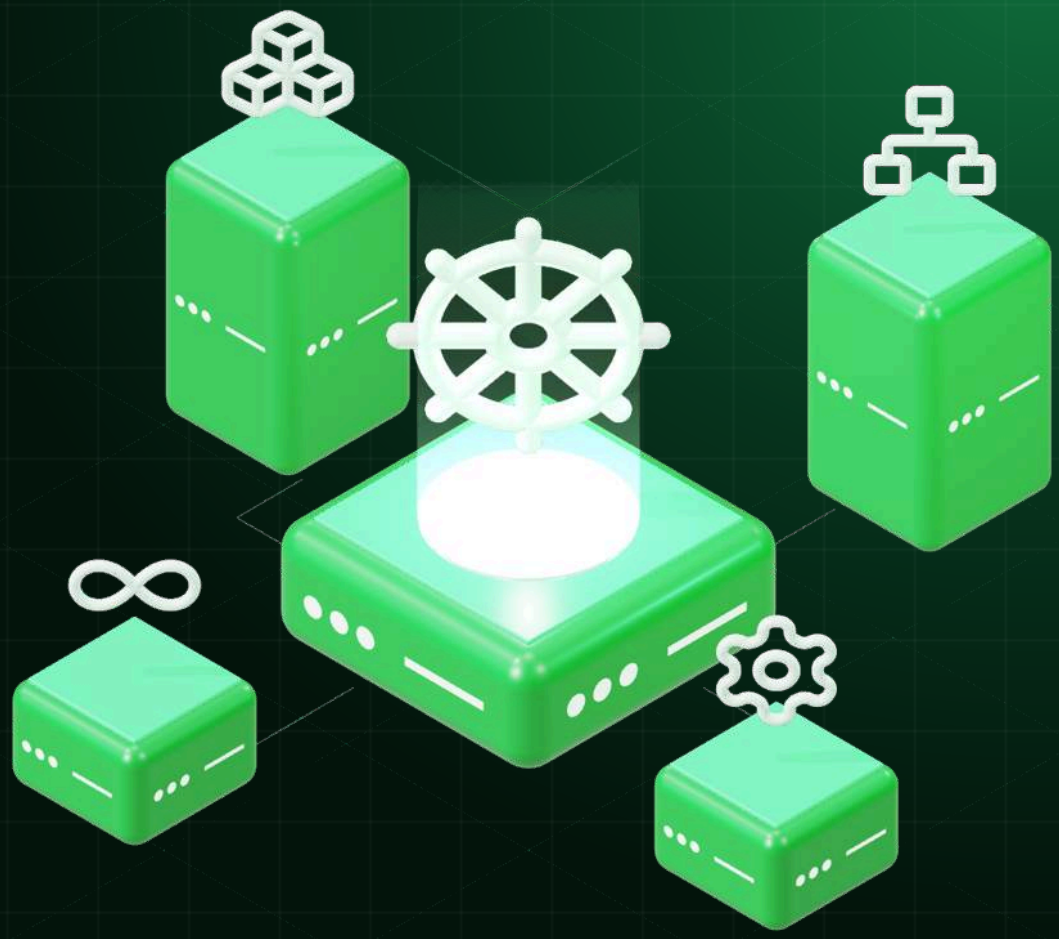
Will I get access to labs and tools?

Yes. You work with multi-node lab clusters and tools including Helm, Kubebuilder, KEDA, Istio, Kyverno, kube-bench and Velero. These are open source, so you can rebuild most labs locally using kind or minikube.

Q05

Does the program include career support?

You receive guidance on building a portfolio from your projects, resume and profile review, and mock interviews focused on senior DevOps, Kubernetes and platform engineering roles. Career support helps you prepare, but jobs, interviews and salaries are not guaranteed.



✦ LET'S TALK

Start Helm & Kubernetes Advanced with Samcommunity.

INDIVIDUALS

academy@samcommunity.in

Batches, enrolment & career guidance

CORPORATE & INSTITUTIONS

corporate@samcommunity.in

Team batches & custom programs

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