



Program Catalog Page: Applied Cloud and DevOps Engineering (CDOPS)

Program Overview

- **Program Main Code Name:** CDOPS
- **Program Code:** CDOPS
- **Program Length:** 28 Weeks (7 Months)
- **Total Contact Hours:** 336 Hours
- **Total Credit Hours:** 13.3 Credits
- **Delivery Method:** In-person Live Instructor-Led, Virtual Live Instructor-Led, or 1-on-1 Personalized Mentorship

Admissions Requirements

Applicants must:

- Hold a high school diploma or GED
- Be at least 18 years old (or have parental/legal guardian consent if under 18)
- Demonstrate basic computer literacy and familiarity with the internet
- Successfully complete the NVIT Admissions Interview and Readiness Assessment
- (Recommended) Have prior exposure to cloud computing or scripting (e.g., Bash, Python)

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Program Description

The **Applied Cloud and DevOps Engineering (CDOPS)** program provides students with hands-on skills in cloud platform management, infrastructure automation, DevOps pipelines, Kubernetes orchestration, cloud security, and cloud cost optimization. Students gain real-world experience deploying multi-cloud architectures, automating workflows, and implementing site reliability engineering practices.

Graduates will:

- Architect and manage multi-cloud infrastructures (AWS, Azure, GCP)
- Build Infrastructure as Code (IaC) templates and automation scripts
- Develop continuous integration/continuous deployment (CI/CD) pipelines
- Deploy containerized applications on Kubernetes clusters
- Monitor cloud deployments using observability tools
- Manage cost and optimize cloud operations

Course Description

Graduates of the program will be prepared for entry-to-mid-level positions as Cloud Engineers, DevOps Engineers, Infrastructure Automation Engineers, and Site Reliability Engineers.

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Occupations for Which Training Will Be Provided

- Cloud Engineer
- DevOps Engineer
- Site Reliability Engineer (SRE)
- Infrastructure Automation Specialist
- Platform Engineer
- DevSecOps Specialist

Work Settings for Program Graduates

- Technology companies and startups
- Cloud service providers
- SaaS providers
- Consulting firms
- Financial services and healthcare organizations
- Government agencies

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Instructional Components

Instructional Component	Hours
Live Lectures + Live Proctored Exams	63
Labs & Projects	189
On-the-Job Training (OJT) + Capstone Project	84
Total Contact Hours	336
Total Credit Hours	13.3

Course Outline

Subject #	Subject Title	Lecture Hrs	Lab/Project Hrs	OJT + Capstone Hrs	Contact Hrs	Credit Hrs
CDOPS 101	Introduction to Cloud Platforms	6	18	0	24	1.0
CDOPS 102	Infrastructure as Code (IaC) Foundations	6	18	0	24	1.0
CDOPS 103	CI/CD and DevOps Automation	6	18	0	24	1.0

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CDOPS 104	Containers, Kubernetes & Orchestration	6	18	0	24	1.0
CDOPS 105	DevSecOps and Observability	6	18	0	24	1.0
CDOPS 106	Multi-Cloud and Hybrid Deployments	6	18	0	24	1.0
CDOPS 107	GitOps and Advanced Kubernetes Workflows	9	27	0	36	1.2
CDOPS 108	Monitoring, Logging, and SRE Operations	9	27	0	36	1.2
CDOPS 109	Cloud Cost Optimization and FinOps	9	27	0	36	1.2
CDOPS 110	Capstone Project and On-the-Job Training	0	0	84	84	3.6

Total Contact Hours = 336, Total Credits = 13.3

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Subject Descriptions

CDOPS 101 – Introduction to Cloud Platforms

(Weeks 1–2 | Lec 6 Hrs / Lab 18 Hrs / Ext 0 Hrs | 24 Total Hrs | 1.0 Credit Hour) Students will:

- Configure foundational cloud services across AWS, Azure, and GCP.
- Deploy compute instances, storage buckets, and basic networking.
- Manage IAM roles, policies, and security groups.
- Build sandbox cloud environments for development practice.

Prerequisite: None

Tools: AWS Educate, Azure Portal, GCP Console

CDOPS 102 – Infrastructure as Code (IaC) Foundations

(Weeks 3–4 | Lec 6 Hrs / Lab 18 Hrs / Ext 0 Hrs | 24 Total Hrs | 1.0 Credit Hour) Students will:

- Write infrastructure code using Terraform and Ansible.
- Automate deployments of cloud resources.
- Apply GitOps for infrastructure management.

Prerequisite: CDOPS 101

Tools: Terraform, Terraform Cloud, Git, Ansible

CDOPS 103 – CI/CD and DevOps Automation

(Weeks 5–6 | Lec 6 Hrs / Lab 18 Hrs / Ext 0 Hrs | 24 Total Hrs | 1.0 Credit Hour) Students will:

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- Build continuous integration (CI) pipelines.
- Automate deployments with continuous delivery (CD) tools.
- Integrate GitHub Actions, Jenkins, and GitLab CI/CD.

Prerequisite: CDOPS 102

Tools: GitHub Actions, Jenkins, GitLab CI/CD

CDOPS 104 – Containers, Kubernetes & Orchestration

(Weeks 7–8 | Lec 6 Hrs / Lab 18 Hrs / Ext 0 Hrs | 24 Total Hrs | 1.0 Credit Hour) Students will:

- Containerize applications using Docker.
- Deploy and manage Kubernetes clusters.
- Implement service discovery, ingress controllers, and scaling.

Prerequisite: CDOPS 103

Tools: Docker, Kubernetes, Minikube, Helm

CDOPS 105 – DevSecOps and Observability

(Weeks 9–10 | Lec 6 Hrs / Lab 18 Hrs / Ext 0 Hrs | 24 Total Hrs | 1.0 Credit Hour) Students will:

- Secure DevOps pipelines using best practices.
- Implement vulnerability scanning and secrets management.
- Build observability stacks for monitoring and alerting.

Prerequisite: CDOPS 104

Tools: Prometheus, Grafana, Aqua Security, HashiCorp Vault

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CDOPS 106 – Multi-Cloud and Hybrid Deployments

(Weeks 11–12 | Lec 6 Hrs / Lab 18 Hrs / Ext 0 Hrs | 24 Total Hrs | 1.0 Credit Hour)

Students will:

- Architect and deploy workloads across multiple cloud providers.
- Implement hybrid cloud models connecting on-premises to cloud.
- Configure cross-cloud networking and VPNs.
- Manage workloads using Kubernetes federation.

Prerequisite: CDOPS 105

Tools: AWS VPC, Azure Virtual Network, GCP VPC, Kubernetes Federation

CDOPS 107 – GitOps and Advanced Kubernetes Workflows

(Weeks 13–15 | Lec 9 Hrs / Lab 27 Hrs / Ext 0 Hrs | 36 Total Hrs | 1.2 Credit Hours)

Students will:

- Implement GitOps workflows for automated deployments.
- Manage complex microservices across Kubernetes clusters.
- Build Helm charts and Kustomize templates for scalable deployments.
- Integrate ArgoCD and Flux for progressive delivery strategies.

Prerequisite: CDOPS 106

Tools: ArgoCD, FluxCD, Helm, Kustomize, GitHub

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CDOPS 108 – Monitoring, Logging, and SRE Operations

(Weeks 16–18 | Lec 9 Hrs / Lab 27 Hrs / Ext 0 Hrs | 36 Total Hrs | 1.2 Credit Hours)

Students will:

- Implement monitoring and alerting systems for cloud applications.
- Configure centralized logging and distributed tracing.
- Apply site reliability engineering (SRE) principles.
- Create SLOs, SLAs, and error budgets for cloud services.

Prerequisite: CDOPS 107

Tools: Prometheus, Grafana, Loki, Elastic Stack, Jaeger

CDOPS 109 – Cloud Cost Optimization and FinOps

(Weeks 19–21 | Lec 9 Hrs / Lab 27 Hrs / Ext 0 Hrs | 36 Total Hrs | 1.2 Credit Hours)

Students will:

- Analyze cloud billing and usage reports.
- Optimize resource consumption across cloud services.
- Implement budgeting, forecasting, and chargeback models.
- Apply FinOps frameworks to control cloud spend.

Prerequisite: CDOPS 108

Tools: AWS Cost Explorer, Azure Cost Management, GCP Billing Reports, CloudHealth

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CDOPS 110 – Capstone Project and On-the-Job Training

(Weeks 22–28 | Lec 0 Hrs / Lab 0 Hrs / OJT + Capstone 84 Hrs | 84 Total Hrs | 3.6 Credit Hours)

Students will:

- Complete a real-world Cloud and DevOps engineering project.
- Design, deploy, monitor, and optimize cloud infrastructure and pipelines.
- Present final deliverables including architecture diagrams, deployment artifacts, monitoring dashboards, and cost reports.

Prerequisite: CDOPS 109

Class Schedule:

- **Day Students:** Monday to Wednesday, 9:30 AM – 12:30 PM
- **Afternoon Students:** Monday to Wednesday, 1:30 PM – 4:30 PM
- **Evening Students:** Monday to Wednesday, 6:00 PM – 9:00 PM
- **Weekend Students:** Thursday to Saturday, available in Morning, Afternoon, and Evening shifts
- **Virtual Mentorship Students:** 12–24 flexible hours per week

Day students will attend class Monday through Wednesday. Weekend students will attend class Thursday through Saturday. A 10-minute break will be taken every instructional hour for all in-person students. Lunch break for day students is from 12:30 PM to 1:30 PM. Evening students will not have a meal break, but will have a 10-minute break each instructional hour.

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Dates School Will Be Closed:

- New Year's Day
- Martin Luther King Day
- Presidents' Day
- Good Friday
- Memorial Day
- Independence Day
- LBJ's Birthday
- Labor Day
- Veteran's Day
- Thanksgiving Day
- Day After Thanksgiving
- Christmas Eve
- Christmas Day
- Day After Christmas

Class Start Dates:

- Classes for all students (Day, Afternoon, Evening, Weekend) begin **May 26, 2025**
- New classes start approximately every eight weeks for in-person students
- Virtual Mentorship students have rolling admissions with flexible start dates

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Tuition and Fees

Fee Type	Cost
Registration Fee	\$50.00
Books and Supplies (estimated)	\$600.00
Background Check (if applicable)	\$150.00
Tuition (In-person Live Instruction)	\$11,499.00
Tuition (Virtual Live Instruction)	\$10,499.00
Tuition (1-on-1 Virtual Mentorship)	\$12,499.00

Total Program Cost:

- In-person: \$12,299.00
- Virtual Live: \$11,299.00
- Virtual Mentorship: \$13,299.00

Hourly Tuition Rate (Based on Total Program Cost Divided by 336 Contact Hours):

- In-Person Live Instruction: \$36.61 per hour
- Virtual Live Instruction: \$33.61 per hour
- 1-on-1 Virtual Mentorship: \$39.58 per hour

Cost Per Single Subject

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Each single subject cost is calculated based on the tuition per contact hour multiplied by the number of contact hours for each subject.

Subject Code	Subject Title	Contact Hours	In-Person Cost	Virtual Live Cost	Virtual Mentorship Cost
CDOPS 101	Introduction to Cloud Platforms	24	\$878.64	\$806.64	\$949.92
CDOPS 102	Infrastructure as Code (IaC) Foundations	24	\$878.64	\$806.64	\$949.92
CDOPS 103	CI/CD and DevOps Automation	24	\$878.64	\$806.64	\$949.92
CDOPS 104	Containers, Kubernetes & Orchestration	24	\$878.64	\$806.64	\$949.92
CDOPS 105	DevSecOps and Observability	24	\$878.64	\$806.64	\$949.92
CDOPS 106	Multi-Cloud and Hybrid Deployments	24	\$878.64	\$806.64	\$949.92
CDOPS 107	GitOps and Advanced Kubernetes Workflows	36	\$1,317.96	\$1,209.96	\$1,424.88

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CDOPS 108	Monitoring, Logging, and SRE Operations	36	\$1,317.96	\$1,209.96	\$1,424.88
CDOPS 109	Cloud Cost Optimization and FinOps	36	\$1,317.96	\$1,209.96	\$1,424.88
CDOPS 110	Capstone Project and On-the-Job Training	84	\$3,076.92	\$2,822.52	\$3,325.92

Note: Registration Fee, Books and Supplies, and Background Check are already included in the total program cost calculations but apply separately for students enrolling in individual subjects only.

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