

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Industry Certified Value Added Course

on

“DevOps - Dockers”

01-06-2026 to 06-06-2026

DevOps - Dockers

50 HOURS

Objectives

- To introduce DevOps culture, SDLC principles, and the rationale for automation in modern software delivery.
- To equip participants with Linux, Git, Docker, and CI/CD skills through hands-on implementation sessions.
- To develop the ability to design, build, and validate end-to-end deployment pipelines for web applications.
- To foster problem-solving and collaborative skills through Day 6 practical sprints and peer assessment.

UNIT 1: DevOps, Linux & Networking

(10 Hours)

DevOps philosophy, culture, and SDLC stages, Waterfall vs Agile vs DevOps, Linux CLI: file system navigation, permissions, process management, shell scripting basics, Networking fundamentals: OSI model, IP addressing, HTTP/HTTPS, DNS resolution Web server setup and configuration using Nginx/Apache; serving static content

UNIT 2: Git, GitHub & Application Architecture

(10 Hours)

Git fundamentals: init, clone, add, commit, push, pull; GitHub remote workflows - Branching strategies: feature branches, merge, rebase, pull request review Application architecture: monolith vs microservices, deployment flow overview Troubleshooting basics: reading logs, common errors, rollback strategies

UNIT 3: Docker & Containers

(10Hours)

Container concepts: VMs vs containers, Docker architecture, images and registries Docker CLI: run, build, ps, stop, rm, exec, logs; image layers Dockerfile authoring: FROM, RUN, COPY, EXPOSE, CMD; best practices Docker Compose: multi-container apps, service networking, volumes; Dockerise own app

UNIT 4: CI/CD & Monitoring

CI/CD concepts: continuous integration, delivery vs deployment; pipeline stages GitHub Actions: workflow YAML, triggers, jobs, steps, secrets, matrix builds Build and deploy automation: Docker build in CI, push to registry, deploy to server-Monitoring & observability: log aggregation, health checks, alerting basics

UNIT 5: Kubernetes & Cloud Deployment — a natural progression

(10 Hours)

Docker single-host to cluster-level orchestration: Kubernetes architecture (nodes, pods, deployments, services), writing YAML manifests, managing ConfigMaps and Secrets, scaling and rolling updates, Ingress routing, and a cloud platform overview (AWS/GCP/Azure) with a hands-on cloud deployment.

Course Outcomes (COs)

Upon completion of the course, the student will be able to

O. No.	CO Statements	Knowledge Level	SDG Mapping
CO1	Apply Linux command-line operations, shell scripting, and networking fundamentals to configure and manage a web server environment	K3 – Apply	SDG 4, 9
CO2	Implement Git-based version control workflows including branching, merging, and pull requests for collaborative software development	K3 – Apply	SDG 4, 8, 17
CO3	Design and automate CI/CD pipelines using GitHub Actions to enable continuous integration, delivery, and monitoring of applications	K6 – Create	SDG 9, 8
CO4	Design and automate CI/CD pipelines using GitHub Actions to enable continuous integration, delivery, and monitoring of applications	K6 – Create	SDG 9, 8
CO5	Deploy containerised applications to a Kubernetes cluster and provision cloud-based infrastructure using core cloud platform services	K3 – Apply	SDG 9, 11,13

PROGRAMME SPECIFIC OUTCOMES (PSOs):**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

PSO 1 : Professional Skills: The ability to understand, analyze and develop computer programs in the areas related to algorithms, system software, multimedia, web design, big data analytics, and networking for efficient design of computer-based systems of varying complexity.

PSO 2: Problem - Solving Skills: The ability to apply standard practices and strategies in software project development using open-ended programming environments to deliver a quality product for business success.

CO-PO MAPPING:

Course Code	CO. No.	POs											PSOs	
		1	2	3	4	5	6	7	8	9	10	11	1	2
DevOps - Dockers	CO1	3	2	2	-	3	-	-	-	1	1		3	2
	CO2	2	1	2	-	3	-	-	-	3	2	1	2	3
	CO3	3	3	3	2	3	-	-	-	2	-	2	3	3
	CO4	3	3	3	2	3	-	-	-	2	-	2	3	3
	CO5	3	2	3	-	3	-	1	-	2	-	2	3	3

3- High, 2- Moderate, 1 -Low

SDG MAPPING:

Course Code	CO No.	SDGs																
		SDG1	SDG2	SDG3	SDG4	SDG5	SDG6	SDG7	SDG8	SDG9	SDG10	SDG11	SDG12	SDG13	SDG14	SDG15	SDG16	SDG17
DevOps - Dockers	CO1				✓					✓								
	CO2				✓				✓									✓
	CO3								✓	✓								
	CO4								✓	✓								
	CO5									✓		✓		✓				

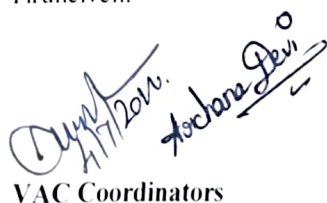

VAC Trainers

Mr. T. Aravindhan - Devops Engineer III,

Mr. K. Jeyanth - Devops Engineer II ,

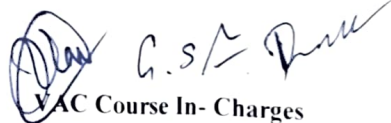
ICANIO Technologies PVT Ltd.,

Tirunelveli.


VAC Coordinators

Mrs. S. Athilakshmi , AP- CSE ,

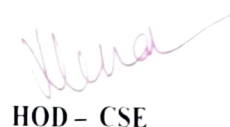
Mrs. S. Archanadevi , AP- CSE.


VAC Course In- Charges

Mr. D. Raj, AP- CSE.

Mr. G. Sundararaju , AP –CSE.

Mrs. K. Priyadharsini , AP – CSE.


HOD – CSE

Dr. A. Meenakshi , Professor –CSE.