DevOps and Cloud Automation

Introduction

DevOps and Cloud Automation combine development, operations, and cloud technologies to create faster, more reliable, and scalable software delivery processes. By automating workflows, infrastructure, and deployments, organizations improve efficiency, reduce manual errors, and accelerate innovation. This approach emphasizes collaboration, continuous integration and delivery (CI/CD), and the use of cloud platforms to streamline the entire lifecycle of applications—from development to production.

CURRICULUM:

Sr. No.	Contents
1	**Introduction to DevOps** • What is DevOps and its importance • DevOps lifecycle and key principles • Overview of Agile and CI/CD pipelines • Version control with Git & GitHub • Setting up a DevOps environment

Sr. No.	Contents
2	**CI/CD Implementation** • Introduction to Continuous Integration and Delivery • Jenkins setup and pipeline creation • GitHub Actions and automated deployments • Integrating testing tools into CI/CD • Hands-on project: Build and deploy a sample app
3	**Containerization with Docker** • Introduction to containers • Docker installation and commands • Building and managing Docker images • Docker Compose for multi-container apps • Container registries (Docker Hub, GitHub Packages)
4	**Orchestration with Kubernetes** • Introduction to Kubernetes and architecture • Pods, Deployments, and Services • ConfigMaps, Secrets, and Volumes • Kubernetes networking and scaling • Hands-on mini project: Deploying a web app on Kubernetes

Sr. No.	Contents

5	**Cloud Platforms and Infrastructure Automation**
	• Overview of Cloud Platforms (AWS, Azure, GCP)
	• Introduction to Infrastructure as Code (IaC) concepts
	  ◦ Overview of key AWS Services:
	  ◦ EC2 (Virtual Servers)
	  ◦ S3 (Storage Management)
	  ◦ RDS (Relational Database Service)
	  ◦ VPC (Networking and Security)
	  ◦ IAM (Identity and Access Management)
	  ◦ CloudWatch (Monitoring and Logging)
	• Automating deployments and scaling using AWS services

6	**Monitoring, Security, and Best Practices** • Monitoring with Prometheus & Grafana • Securing DevOps pipelines and containers • Best practices for DevOps & Cloud Automation • Final project: Complete CI/CD pipeline deployment on cloud

Learning Outcomes:

By the end of this course, participants will be able to:

- Understand DevOps principles, CI/CD pipelines, and automated workflows.
- Gain hands-on skills in cloud platforms such as AWS, Azure, or Google Cloud for deploying
- Learn to use automation tools like Docker, Kubernetes, Terraform, and Jenkins to build scalable, repeatable environments.

Course Benefits:

- Improves efficiency by automating daily tasks.
- Helps build scalable cloud solutions for projects.
- Increases team collaboration and speeds up delivery.

Skill-Wise Earnings:

Skill Level	Avg Monthly Salary
Junior	75k-100k
Mid-Level	100k - 170k
Advanced	250k- 450k
Freelancer	Earn in millions

Affiliation & Collaboarations

PBTE

PSDA