DevOps

Course Modules & Topics

🔧 Module 1: Introduction to DevOps

- What is DevOps?
- DevOps Lifecycle & Principles
- Benefits of DevOps in Software Development
- Agile vs DevOps

🖥️ Module 2: Linux & Command Line Essentials

- Linux Basics and Shell Commands
- File Systems, Permissions, Processes
- Bash Scripting for Automation
- Package Management (apt, yum)

🗃️ Module 3: Version Control with Git & GitHub

- Git Basics: init, clone, commit, push, pull
- Branching & Merging
- GitHub Collaboration
- Git Tags, Hooks, and Best Practices

⚙️ Module 4: Continuous Integration with Jenkins

- Jenkins Installation & Configuration
- Creating Jobs and Pipelines
- Integrating Git and Build Tools
- Jenkinsfile & Declarative Pipeline Scripting

📦 Module 5: Build Tools & Dependency Management

- Maven, Gradle, or NPM
- Build Automation Concepts
- Managing Project Dependencies
- Artifact Repositories (Nexus, JFrog)

🐳 Module 6: Containerization with Docker

- What is Docker?
- Docker Architecture & CLI
- Creating Dockerfiles and Images
- Docker Compose for Multi-Container Apps

☸️ Module 7: Container Orchestration with Kubernetes

- Kubernetes Architecture
- Pods, Deployments, Services
- Helm Charts (Introduction)
- Scaling and Auto Healing

🛠️ Module 8: Configuration Management

- Infrastructure as Code (IaC)
- Ansible Basics (Playbooks, Roles)
- Introduction to Terraform
- Comparing Tools: Puppet, Chef, Ansible

📊 Module 9: Monitoring & Logging

- Monitoring with Prometheus and Grafana
- Log Management with ELK Stack (Elasticsearch, Logstash, Kibana)
- Alerting and Metrics
- Health Checks and Uptime Monitoring

☁️ Module 10: DevOps in the Cloud

- Cloud Platforms Overview: AWS, Azure, GCP
- CI/CD in Cloud Environment
- Deploying Containers on Cloud (ECS, EKS)
- Using Cloud DevOps Tools (e.g., AWS CodePipeline)

🚀 Capstone Project

- Implement Full DevOps Lifecycle
- Git + Jenkins + Docker + Kubernetes + Monitoring
- Team Collaboration and Final Presentation