**Course Title:** DevOps

**Level:** Beginner

**Duration:** 30 Hours

**Prerequisites:**  Basic programming, logical thinking, CLI

*This module emphasizes hands-on implementation. The facilitator will select a real-world infrastructure or deployment scenario and demonstrate the complete DevOps workflow from provisioning to automation enabling participants to learn through practical execution of industry-relevant practices.*

**Course Outline**:

**Session 1: Introduction to DevOps**

* DevOps principles and culture
* What is CI/CD?
* DevOps lifecycle overview
* DevOps roadmap walkthrough
* Tools landscape (Git, Docker, Jenkins, Kubernetes overview)

**Session 2: Linux Fundamentals I**

* Introduction to Linux OS and distributions
* Terminal navigation, basic file handling
* Permissions, ownership, users, groups
* Using vi, nano, environment variables

**Session 3: Linux Fundamentals II**

* Bash scripting basics
* Crontab, scheduling jobs
* SSH, SCP, Rsync, archiving commands
* Monitoring logs with tail, grep, journalctl

**Session 4: Networking Essentials for DevOps**

* IP, ports, DNS, NAT, firewall basics
* VirtualBox network types
* Network tools: ping, netstat, ifconfig, curl

**Session 5: Git & Version Control Basics**

* Git installation & initialization
* Add, commit, log, status
* GitHub intro, push/pull
* Branching and merging basics
* .gitignore, README, Markdown intro

**Session 6: Introduction to Containers & Docker**

* Containers vs VMs
* Installing Docker
* Docker architecture & commands
* Running containers from images

**Session 7: Docker Images and Dockerfile**

* Dockerfile basics
* Building and tagging custom images
* Volumes and port mapping
* DockerHub push & pull

**Session 8: Docker Compose Basics**

* Compose file structure
* Running multi-container apps
* Sample: Web app + DB stack

**Session 9: Overview of Jenkins & CI/CD Concepts**

* Jenkins installation & first job
* Build pipeline intro
* Jenkinsfile basics (syntax + trigger)

**Session 10: Final Mini Project & Review**

* Dockerize a simple app (e.g., To-do app)
* Create a basic CI pipeline with GitHub + Jenkins
* Peer demo and code walkthrough

**Deliverables:**

* Deployed Docker app
* GitHub Repo
* Basic CI/CD pipeline with build log