



## AI LABS & RESEARCH CENTER

# AWS DevOps Program — Detailed Course Syllabus

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MindForge AI Labs & Research Center's AWS DevOps Program takes learners from Linux and AWS core services through networking, storage, monitoring, and the full DevOps toolchain (Git, Jenkins, Docker, Ansible, Terraform) — concluding with a hands-on capstone project provisioning and automating a real AWS environment.

**Program Duration:** 6–8 Weeks (Tentative) | **Mode:** Classroom / Online | **Format:** Live projects + Practical assessments

## AWS DevOps Program

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Covers Linux fundamentals, core AWS services (compute, networking, storage, monitoring, database, messaging), and the complete DevOps toolchain — Git, CI/CD, Jenkins, Docker, Ansible, and Terraform — for learners aiming to work as Cloud/DevOps engineers.

*Total Duration: 6–8 Weeks (Tentative)*

### Module 1 — Linux & Shell Scripting

*Duration: 0.5–1 Week*

- Linux fundamentals and setting up an EC2 instance with Linux
- Shell scripting: variables, special variables, basic operators
- Decision-making statements and shell loops
- Practical command-line administration for DevOps workflows

### Module 2 — AWS Core & Compute

*Duration: 1.5–2 Weeks*

- Cloud computing fundamentals: deployment & service models, cloud types, pros/cons
- EC2: AMIs, instance components, launching & connecting to Windows/Linux instances
- Key pair setup, RDP/PuTTY connectivity
- Security Groups: purpose, creation, and assignment to EC2
- Load Balancers: types, components, configuration, and pricing
- Auto Scaling: components, configuration, and pricing

### Module 3 — AWS Networking & Storage

*Duration: 1–1.5 Weeks*

- VPC fundamentals: CIDR blocks, subnets, route tables, Internet & NAT Gateways
- VPC Peering: architecture and connection setup
- S3: object vs block storage, bucket properties, versioning, lifecycle rules
- Static website hosting on S3, cross-region replication, bucket security & encryption
- Route 53: domain registration, health checks, and pricing
- CloudFront: edge locations, regional edge locations, TTL & invalidation

### Module 4 — AWS Monitoring, Database & Messaging

*Duration: 1–1.5 Weeks*

- CloudWatch: dashboards, metrics, alarms, logs, and pricing
- CloudTrail: purpose, components, and use cases
- RDS: supported DB engines, snapshots & backups, security groups, pricing
- SNS: topics, subscribers, policies, and pricing
- IAM: users, roles, policies, and access management fundamentals

## Module 5 — DevOps Toolchain: Git, CI/CD & Containers

*Duration: 1.5–2 Weeks*

- Git & GitHub: source code management, version control, branching, reset/revert
- CI/CD pipeline concepts and workflow
- Jenkins: distributed architecture, features, and pipelines
- Maven: build lifecycle and dependency management
- Docker: containerization, components, objects, volumes, Dockerfiles, Docker Hub & Compose

## Module 6 — Configuration Management & Infrastructure as Code

*Duration: 1–1.5 Weeks*

- Configuration Management Tools overview: Chef, Puppet, Ansible, Salt
- Ansible: playbooks, ad-hoc commands & modules, loops, vaults, and roles
- Terraform: how it works, variables, resource attribute references
- Terraform: explicit dependencies, data sources, and VPC creation
- Capstone project: provisioning and automating an end-to-end AWS environment with CI/CD
- Resume building, mock interviews, and DevOps interview preparation

## Program Summary

- **Total Program Duration: 6–8 Weeks (Tentative)**

## Program Outcomes

- Strong foundation in Linux administration and shell scripting
- Hands-on experience provisioning and managing core AWS services
- Practical understanding of networking (VPC), storage (S3), and monitoring (CloudWatch/CloudTrail)
- Ability to build CI/CD pipelines using Git, Jenkins, Maven, and Docker
- Experience with configuration management (Ansible) and Infrastructure as Code (Terraform)
- Resume building, mock interviews, and placement support

## Who Should Enroll

Freshers, computer science graduates, and working professionals looking to build a career in Cloud Computing and DevOps engineering. Basic familiarity with command-line usage is helpful but not mandatory.