

AWS Cloud Engineering Course

2-Month Program Outline

Objective

Transform learners into **AWS Cloud Engineers** capable of:

- Deploying backend applications on cloud
- Managing infrastructure (compute, storage, DB)
- Using DevOps practices (CI/CD, Docker)
- Building scalable, production-ready systems

Program Duration

8 Weeks (2 Months)

Structure

- **2 Days** → Learning
- **2 Days** → Hands-on Lab
- **1 Day** → Demo + Knowledge Sharing

PHASE 1: Cloud Fundamentals (Week 1)

Topics

- What is Cloud Computing
- AWS Global Infrastructure (Regions, AZs)
- IAM (Users, Roles, Policies)
- AWS Free Tier overview

Services & Labs

- **Services:** Amazon Web Services IAM, AWS Console
- **Hands-on:** Create AWS account, Setup IAM user & roles, Secure access (MFA)

Outcome: Understand AWS basics and secure cloud access.

PHASE 2: Compute + Storage (Week 2-3)

Topics

- EC2 (Virtual Servers)
- S3 (Object Storage)
- EBS vs S3
- Security Groups

Services & Labs

- **Services:** EC2, S3
- **Hands-on:** Launch EC2 instance, Deploy simple app (Node/Python/Java), Upload files to S3, Host static website on S3

Outcome: Run applications on AWS and manage storage.

PHASE 3: Networking (Week 4)

Topics

- VPC (Virtual Private Cloud)
- Subnets (public/private)
- Internet Gateway
- Load Balancer basics

Services & Labs

- **Services:** VPC, Elastic Load Balancing
- **Hands-on:** Create VPC, Setup public/private subnet, Configure internet access, Setup load balancer

Outcome: Understand AWS networking and build secure architectures.

PHASE 4: Database Services (Week 5)

Topics

- RDS (Relational DB)
- DynamoDB basics
- DB scaling & backups

Services & Labs

- **Services:** RDS, DynamoDB
- **Hands-on:** Create RDS instance, Connect backend app to DB, Perform CRUD operations

Outcome: Manage cloud databases and integrate DB with apps.

PHASE 5: Serverless + APIs (Week 6)

Topics

- Serverless architecture
- AWS Lambda
- API Gateway
- Event-driven systems

Services & Labs

- **Services:** Lambda, API Gateway
- **Hands-on:** Create Lambda function, Build serverless API, Connect API Gateway

Outcome: Build scalable serverless apps.

PHASE 6: DevOps + CI/CD (Week 7)

Topics

- CI/CD pipelines
- CodeBuild & CodePipeline
- Docker basics
- Infrastructure as Code (intro)

Services & Labs

- **Services:** CodePipeline, CodeBuild
- **Hands-on:** Setup CI/CD pipeline, Auto deploy app, Dockerize application

Outcome: Automate deployments and understand DevOps.

PHASE 7: Monitoring + Scaling (Week 8)

Topics

- CloudWatch (logs & metrics)
- Auto Scaling
- Cost optimization
- Security best practices

Services & Labs

- **Services:** CloudWatch, Auto Scaling
- **Hands-on:** Setup monitoring dashboard, Configure auto scaling, Analyze cost usage

Outcome: Manage production systems and optimize performance & cost.

FINAL PROJECT (End of Course)

Choose ONE of the following options to build end-to-end:

1. **Full Stack Deployment:** Backend on EC2, DB on RDS, Storage on S3
2. **Serverless App:** Lambda + API Gateway, DynamoDB
3. **Scalable Web App:** Load balancer, Auto scaling, Monitoring

Recommended Tech Stack

- **Cloud:** Amazon Web Services
- **Backend:** Java / Python / Node.js
- **Database:** RDS / DynamoDB
- **DevOps:** Docker
- **CI/CD:** AWS CodePipeline

High-Value POC Categorization

- **Beginner:** EC2 app deployment, S3 static hosting
- **Intermediate:** DB integration, Serverless API
- **Advanced:** Auto scaling system, CI/CD pipeline

Weekly Execution Plan

Day	Activity
Monday	Learning
Tuesday	Learning
Wednesday	Hands-on Lab
Thursday	Hands-on Lab
Friday	Demo / Knowledge Sharing

Team Setup & Role Rotation

- Cloud Engineer
- DevOps Engineer
- Backend Integrator
- Security Manager

Evaluation Metrics

- ✓ Deployment success
- ✓ Architecture design
- ✓ Security setup
- ✓ Cost optimization

Outcome After 2 Months

- Deploy apps on AWS
- Design cloud architecture
- Build serverless systems
- Implement DevOps pipelines

How This Fits Your Overall Plan

From your previous roadmaps:

- **Frontend** → UI
- **Python / Java** → Backend
- **AWS** → Cloud

Final Result: Full Stack + Cloud + AI Engineer