

CloudTech Pvt Ltd

AWS DevOps Training Course Outline

Last Modified: Aug 2025

Module 1: Introduction to DevOps & AWS

- What is DevOps? Principles & culture
 - DevOps lifecycle: Plan → Code → Build → Test → Release → Deploy → Operate → Monitor
 - AWS Global Infrastructure (Regions, AZs, Edge locations)
 - Shared Responsibility Model
 - Introduction to AWS Management Console, CLI, SDKs
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Module 2: Source Control & Collaboration

- **AWS CodeCommit** (Git-based repository)
 - Branching strategies (GitFlow, trunk-based development)
 - Code review workflows & pull requests
 - Integration with external repos (GitHub, Bitbucket)
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Module 3: Continuous Integration (CI)

- **AWS CodeBuild** basics
 - Buildspec files & build environments
 - Unit & integration testing automation
 - Artifacts management with **Amazon S3 & CodeArtifact**
 - Notifications & event triggers (SNS, EventBridge)
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Module 4: Continuous Delivery / Deployment (CD)

- **AWS CodePipeline** concepts & stages
 - Deployment strategies:
 - Rolling updates
 - Blue/Green deployments
 - Canary deployments
 - **AWS CodeDeploy** (for EC2, Lambda, ECS)
 - Integrating with CloudFormation / CDK for Infrastructure as Code
 - Automating rollback strategies
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Module 5: Infrastructure as Code (IaC)

- Introduction to IaC & benefits
- **AWS CloudFormation**: templates, stacks, stack sets
- **AWS CDK** (Cloud Development Kit) with Python/TypeScript

- **Terraform on AWS** (optional cross-skill)
 - Configuration management with **AWS Systems Manager** (Parameter Store, State Manager, Automation)
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Module 6: Containers & Orchestration

- Docker basics & container lifecycle
 - **Amazon Elastic Container Service (ECS)** with Fargate
 - **Amazon Elastic Kubernetes Service (EKS)** basics
 - CI/CD for containers with CodePipeline + ECS/EKS
 - Amazon ECR (Elastic Container Registry)
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Module 7: Serverless DevOps

- **AWS Lambda** deployment with CI/CD
 - SAM (Serverless Application Model) & SAM CLI
 - Step Functions for orchestration
 - Monitoring serverless pipelines
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Module 8: Monitoring, Logging & Observability

- **Amazon CloudWatch** (metrics, dashboards, alarms, Logs Insights)
- **AWS X-Ray** (tracing & debugging distributed apps)

- Centralized logging with CloudWatch Logs & Amazon OpenSearch
 - Integrating monitoring into CI/CD pipelines
 - Incident management automation
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Module 9: Security & Compliance in DevOps

- IAM best practices (roles, policies, federation)
 - Secrets & config management (Secrets Manager, Parameter Store, KMS)
 - Security scanning in pipelines (CodeGuru, third-party tools)
 - Audit & compliance automation (AWS Config, Security Hub)
 - DevSecOps integration
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Module 10: Scaling & High Availability

- Auto Scaling for EC2 & ECS/EKS
 - Elastic Load Balancing (ALB, NLB)
 - Multi-AZ & Multi-Region strategies
 - CI/CD with highly available architecture
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Module 11: Cost Optimization in DevOps

- Cost visibility with AWS Cost Explorer & Budgets
- Optimizing builds & pipelines for cost

- Spot instances in DevOps pipelines
 - Right-sizing infrastructure
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Module 12: Advanced Topics & Real-World Projects

- Multi-account DevOps with AWS Organizations & Control Tower
 - Hybrid cloud DevOps (on-prem + AWS)
 - Blue/Green & Canary with Lambda & ECS
 - GitOps approach with AWS & ArgoCD
 - Case Study: End-to-End AWS DevOps pipeline project
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Sample Project

Objective: Build a full CI/CD pipeline on AWS that:

- Pulls code from CodeCommit/GitHub
- Runs tests via CodeBuild
- Deploys to ECS/EKS (or Lambda) using CodePipeline + CodeDeploy
- Uses CloudFormation/CDK for IaC
- Implements monitoring with CloudWatch + X-Ray
- Enforces security with IAM, Config, and Secrets Manager