Cloud and DevOps Program

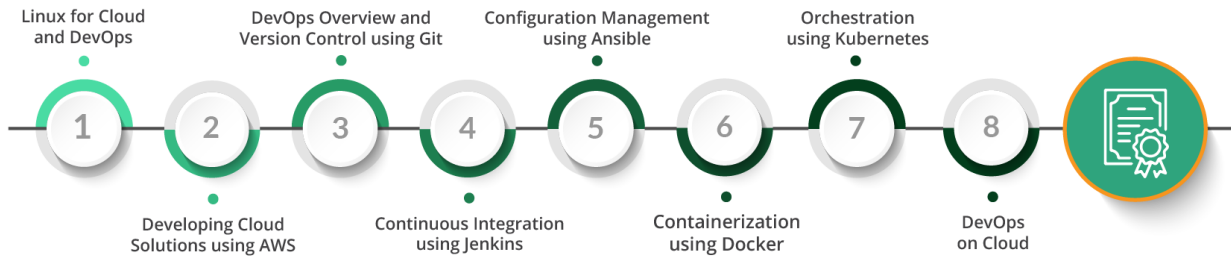## Course Curriculum

About Edureka Learning Center

'Your go-to partner for education upgrading and upskilling with current, industry-relevant courses that unleash your employment potential and make you production-ready to fit the tech market demand!'

Edureka Learning Center is democratizing access to high-quality education at an affordable price. We are playing our part in helping the country meet the growing demand for talent across segments. We follow an outcome-oriented approach while not compromising on either quality or affordability. Our emphasis is to become a bridge and fill the employment gap in our country by increasing the employment quotient of students and enabling them to access premium jobs.

About the Program

Edureka Learning Center Cloud and DevOps Program prepares you to get job-ready and enhance your skills to match the industry standards. This program will enable you to build CI-CD pipelines using AWS services and DevOps tools. This program starts with the basics of Linux, makes you proficient in developing and maintaining cloud solutions using AWS, helps you implement DevOps principles of version control, continuous integration, continuous development and deployment, configuration management using tools such as Git, Jenkins, Ansible, Docker, and Kubernetes. It also covers DevOps on cloud using AWS services such as CodeCommit, CodeBuild, CloudFormation, Beanstalk, and many more while increasing your employability multifold.

Cloud and DevOps Program Roadmap

Linux for Cloud and DevOps

DevOps Overview and Version Control using Git

Configuration Management using Ansible

Orchestration using Kubernetes

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Developing Cloud Solutions using AWS

Continuous Integration using Jenkins

Containerization using Docker

DevOps on Cloud

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5. Configuration Management using Ansible

6. Containerization using Docker

7. Orchestration using Kubernetes

8. DevOps on Cloud

*Depending on industry requirements, Edureka may make changes to the course curriculum

Linux for Cloud and DevOps

About the Module

This module is designed to build the foundation of Cloud and DevOps with the help of Linux. You will learn the basics of Linux OS, Linux Commands, User and group management, and various other Linux concepts.

Module Outline

Learning Units:

- Day 1
    - LU1 - Introduction to Linux
    - LU2 - Linux Distribution and Shell

- Day 2
    - LU1 - Miscellaneous Linux Concepts
    - LU2 - Basic Linux Commands

- Day 3
    - LU1 - Advanced Linux Commands
    - LU2 - File System in Linux

- Day 4
    - LU1 - Package Management in Linux
    - LU2 - User Administration

- Day 5
    - LU1 - Group Management
    - LU2 - Permissions

- Day 6
  - LU1 - Process Management
  - LU2 - Basics of Networking

- Day 7
  - LU1 - Addressing
  - LU2 - Network Protocol

Developing Cloud Solutions using AWS

About the Module

In this module, you will learn about the fundamentals of cloud computing and various core AWS services and their usage.

Module Outline

Learning Units:

- Day 8
    - LU1 - Traditional Computing
    - LU2 - Introduction to Cloud Computing

- Day 9
    - LU1 - Service and Deployment Model
    - LU2 - Introduction to AWS

- Day 10
    - LU1 - Global Infrastructure and Services
    - LU2 - Identity and Access Management (IAM)

- Day 11
    - LU1 - IAM Roles and Policies
    - LU2 - IAM Best Practices

- Day 12
    - LU1 - Virtualization using EC2
    - LU2 - Networking Services in EC2

- Day 13
    - LU1 - Storage Services in EC2

- o LU2 – Snapshots

- Day 14
  - o LU1 - Networking Services in EC2
  - o LU2 - Storage Options

- Day 15
  - o LU1 - S3 Overview
  - o LU2 - Miscellaneous Topics on S3

- Day 16
  - o LU1 - Storage Classes on S3
  - o LU2 - Content Delivery Network (CDN) and Snowball

- Day 17
  - o LU1 - Storage Gateway and Windows File Server
  - o LU2 - Elastic Load Balancing

- Day 18
  - o LU1 - Network Load Balancer
  - o LU2 - Application Load Balancer

- Day 19
  - o LU1 - AWS Auto Scaling
  - o LU2 - Lifecycle of Auto Scaling

- Day 20
  - o LU1 - Route 53
  - o LU2 - Routing Policies

- Day 21
  - o LU1 - Database Services and Relational Database Services
  - o LU2 - Different Services in Relational Database Service (RDS)

- Day 22
  - o LU1 - Amazon DynamoDB
  - o LU2 - Amazon ElasticCache

- Day 23
  - o LU1 - Amazon Redshift
  - o LU2 - Types of Networks

- Day 24
  - o LU1 - Configure Virtual Private Cloud

- o   LU2 - Address Translation (NAT) Device

- Day 25
    - o   LU1 - VPC Peering
    - o   LU2 - Virtual Private Network (VPN) and Direct Connect

- Day 26
    - o   LU1 - Cloud Monitoring Services and CloudWatch
    - o   LU2 - Amazon CloudWatch Events and Logs

- Day 27
    - o   LU1 - AWS CloudTrail
    - o   LU2 - Application Services: Simple Email Services (SES)

- Day 28
    - o   LU1 - AWS Simple Notification Services (SNS)
    - o   LU2 -Amazon Simple Queue Service (SQS)

- Day 29
    - o   LU1 - Amazon Simple Workflow Service (SWF) and Amazon EventBridge
    - o   LU2 - AWS Lambda

- Day 30
    - o   LU1 - Security
    - o   LU2 - AWS Cognito and Web Application Firewall (WAF)

- Day 31
    - o   LU1 - AWS Shield and AWS GuardDuty
    - o   LU2 - Data Protection and Trusted Advisor

- Day 32
    - o   LU1 - IT Governance
    - o   LU2 - IT Resources, Security and Billing

- Day 33
    - o   LU1 - Fault-Tolerant System
    - o   LU2 - High Availability

- Day 34
    - o   LU1 - Building Blocks of High Availability
    - o   LU2 - Disaster Recovery

- Day 35
  - o LU1 - Cloud Analytics and Amazon Athena
  - o LU2 - Amazon Elastic MapReduce (EMR)

- Day 36
  - o LU1 - Amazon Kinesis
  - o LU2 - Amazon Elasticsearch

- Day 37
  - o LU1 - Amazon QuickSight and AWS Lake Formation
  - o LU2 - AWS Cost Management and Budgets

DevOps Overview and Version Control using Git

About the Module

In this module, you will get to know about the basics of DevOps along with source code management using Git.

Module Outline

Learning Units:

- Day 38
    - LU1 - Software Development Life Cycle (SDLC)
    - LU2 - Waterfall and Iterative Model

- Day 39
    - LU1 - Agile Development Model
    - LU2 - DevOps Overview

- Day 40
    - LU1 - Phases of DevOps
    - LU2 - Phases of DevOps and DevOps Tools

- Day 41
    - LU1 - DevOps Lifecycle
    - LU2 - Version Control System

- Day 42
    - LU1 - Git Overview
    - LU2 - Configuring Git

- Day 43
  - LU1 - Git File Lifecycle
  - LU2 – Repository

- Day 44
  - LU1 - Remote Repository
  - LU2 - Git Buzzwords

- Day 45
  - LU1 - Git Remote Command
  - LU2 - Fork and Pull Request in GitHub

- Day 46
  - LU1 - Branching
  - LU2 - Branching Operations

- Day 47
  - LU1 - Merge Conflicts and Stashing
  - LU2 - Merging Strategies

- Day 48
  - LU1 - Merging, Rebasing, and Git Tag
  - LU2 - Git Workflow

- Day 49
  - LU1 - Git Workflow and Release Branch workflow
  - LU2 - Forking and Hotfix Branch Workflow

Continuous Integration using Jenkins

About the Module

This module is designed to help you automate the parts of software development related to building, testing, and deploying, facilitating continuous integration.

Module Outline

Learning Units:

- Day 50
    - LU1 - Continuous Integration
    - LU2 – Jenkins

- Day 51
    - LU1 - Configuring and Creating Jenkins Jobs
    - LU2 - Jenkins Plugin

- Day 52
    - LU1 - Global Tool Configuration and Jenkins Integration
    - LU2 - Build Jobs and Configuring Jenkins Job

- Day 53
    - LU1 - Parameterized Builds and Distributed Builds
    - LU2 - Email Notification and Securing Jenkins

- Day 54
    - LU1 - Code Coverage in Jenkins
    - LU2 - Validation and Reporting in Jenkins

- Day 55
  - LU1 - Script Builds and Shell Builds in Jenkins
  - LU2 - Managing Jenkins

- Day 56
  - LU1 - User Management and Jenkins Logs
  - LU2 - Monitoring Jenkins

- Day 57
  - LU1 - Managing Plugins and Backup in Jenkins
  - LU2 - Remote Testing

- Day 58
  - LU1 - Continuous Deployment
  - LU2 - Install and Configure Tomcat

- Day 59
  - LU1 - Jenkins Build Pipeline
  - LU2 - Parallel Jenkins Build and Archive Generated Artifacts

- Day 60
  - LU1 - Jenkins Integration
  - LU2 - Scaling Jenkins

Configuration Management using Ansible

About the Module

In this module, you will learn about Ansible which is an open-source software provisioning, configuration management, and application-deployment tool enabling infrastructure as code.

Module Outline

Learning Units:

- Day 61
    - LU1 - Configuration Management
    - LU2 - Deployment Using Ansible

- Day 62
    - LU1 - Ansible AD-Hoc Commands and Playbooks
    - LU2 - Playbook structure and Variables

- Day 63
    - LU1 - Ansible Tags and Ansible Vault
    - LU2 - Ansible Modules and Roles

- Day 64
    - LU1 - Inventory Management
    - LU2 - Ansible Roles

- Day 65
    - LU1 - Ansible Roles in Playbook and Manage Inclusion
    - LU2 - Jinja 2 Template and Ansible

Containerization using Docker

About the Module

This module is designed to teach you how to package applications into containers—standardized executable components combining application source code with the operating system (OS) libraries and dependencies required to run that code in any environment.

Module Outline

Learning Units:

- Day 66
    - LU1 - Introduction to Containerization
    - LU2 - Virtual Machine and Containers Classification

- Day 67
    - LU1 - Docker
    - LU2 - Docker Engine

- Day 68
    - LU1 - Port Binding and Docker Modes
    - LU2 - Docker CLI and Restart Policy

- Day 69
    - LU1 - Dockerfile
    - LU2 - Image Management

- Day 70
    - LU1 - Docker Registry
    - LU2 - Docker Compose and Orchestration in Docker

- Day 71
  - LU1 - Docker Swarm and Docker Service
  - LU2 - Service Placement and Docker Stack

Orchestration using Kubernetes

About the Module

In this module, you will learn about Kubernetes, which is an open-source system for automating deployment, scaling, and management of containerized applications.

Module Outline

Learning Units:

- Day 72
    - LU1 - Kubernetes Concepts
    - LU2 - Kubernetes Commands

- Day 73
    - LU1 - Kubernetes Pods and Init Container
    - LU2 - Kubernetes Networking

- Day 74
    - LU1 - Pod Networking and Certificates
    - LU2 - Kubernetes Services and Scheduling

- Day 75
    - LU1 - Kubernetes Controllers and Self-Healing Applications
    - LU2 - Kubernetes Scheduling and Pod Priority

- Day 76
    - LU1 - Kubernetes Resource Limiting and Multiple Schedular
    - LU2 - Taints, Tolerations and Configuring Schedular

- Day 77
    - o LU1 - Kubernetes Controllers
    - o LU2 - Kubernetes Scaling and Horizontal Pod Autoscaler (HPA)

- Day 78
    - o LU1 - Persistent Volumes
    - o LU2 - Persistent Volumes Access Mode

- Day 79
    - o LU1 - StatefulSets
    - o LU2 - ConfigMaps and Secrets

DevOps on Cloud

About the Module

In this module, you will learn how to perform and implement DevOps methodologies on Cloud platform.

Module Outline

Learning Units:

- Day 80
  - LU1 - Introduction to DevOps on Cloud
  - LU2 - AWS CodeBuild

- Day 81
  - LU1 - AWS CodeDeploy
  - LU2 - AWS CodePipeline and AWS CodeStar

- Day 82
  - LU1 - CloudFormation
  - LU2 - Advanced CloudFormation Concepts Part – 1

- Day 83
  - LU1 - Advanced CloudFormation Concepts Part - 2
  - LU2 - Advanced CloudFormation Concepts Part – 3

- Day 84
  - LU1 - Stack
  - LU2 - CloudFormation Resource Deletion Policy and Troubleshoots

- Day 85
  - LU1 - Container Orchestration and Elastic Container Service (ECS)
  - LU2 - Container Instance and Networking Modes in ECS

- Day 86
  - LU1 - Service Discovery and Task Placement
  - LU2 - Amazon Elastic Container Registry (ECR)

- Day 87
  - LU1 - ECS in Fargate Launch Type
  - LU2 - Elastic Kubernetes Service and Its Uses

- Day 88
  - LU1 - Helm Package Manager
  - LU2 - Application Deployment Using Beanstalk

- Day 89
  - LU1 - Docker in Elastic Beanstalk
  - LU2 - Deployment Options in Elastic Beanstalk

- Day 90
  - LU1 - Platform Updates and Configuration Files
  - LU2 - Monitoring and Troubleshooting in Elastic Beanstalk