1. Introduction

1. What is DevOps
2. Introduction to DevOps
3. DevOps and Modern Software Engineering
4. Software Development Life Cycle

2. Linux Basics

1. Introduction to Operating Systems
2. Introduction to Virtualization & Virtual Machines
3. Setup a Linux Virtual Machine
4. Linux File System
5. Introduction to Command Line Interface
6. Package Manager – Installing Software on Linux
7. Working with Vim Editor
8. Linux Accounts & Groups
9. File Ownership & Permissions
10. Basic Linux Commands – Pipes & Redirects
11. Introduction to Shell Scripting
12. Environment Variables
13. Networking
14. SSH – Secure Shell

3. Configuration Management (Ansible)

1. Introduction to Ansible
2. Install Ansible
3. Setup Managed Server to Configure with Ansible
4. Ansible Inventory and Ansible ad-hoc commands
5. Configure AWS EC2 server with Ansible
6. Managing Host Key Checking and SSH keys
7. Introduction to Playbooks
8. Ansible Modules
9. Collections in Ansible
10. Deploy Nodejs application
11. Ansible Variables – make your Playbook customizable
12. Deploy Nexus
13. Ansible Configuration – Default Inventory File
14. Run Docker applications
15. Terraform & Ansible
16. Dynamic Inventory for EC2 Servers

17. Deploying Application in K8s
18. Run Ansible from Jenkins Pipeline
19. Ansible Roles – Make your Ansible content more reusable and modular

4. Version Controls Systems & Git

1. Introduction to Version Control and Git
2. Basic Concepts of Git
3. Setup Git Repository Remote and Local
4. Working with Git
5. Initialize a Git project locally
6. Concept of Branches
7. Merge Requests
8. Deleting Branches
9. Rebase
10. Resolving Merge Conflicts
11. Gitignore
12. Git stash
13. Going back in history
14. Undoing commits
15. Merging branches
16. Git for Devops

5. Cloud and IaaS

1. Introduction to AWS
2. Create an AWS account
3. IAM – Manage Users, Roles and Permissions
4. Regions & Availability Zones
5. VPC – Manage Private Network on AWS
6. CIDR Blocks
7. Introduction to EC2 Virtual Cloud Server
8. Deploy to EC2 server from Jenkins Pipeline
9. Introduction to AWS CLI
10. AWS & Terraform Preview
11. Container Services on AWS Preview

6. Containerization and Docker

- What is a Container
- Container vs Image
- Docker vs. Virtual Machine
- Docker Architecture and components
- Main Docker Commands
- Debug Commands
- Docker Demo
- Developing with Docker
- Docker Compose – Run multiple Docker containers
- Dockerfile – Build your own Docker Image
- Private Docker Repository
- Deploy docker application on a server
- Docker Volumes – Persisting Data
- Docker Volumes Demo
- Create Docker Hosted Repository on Nexus
- Deploy Nexus as Docker Container

7. Build Automation and CI/CD (Jenkins)

1. Intro to Build Automation
2. Install Jenkins
3. Introduction to Jenkins UI
4. Install Build Tools in Jenkins
5. Jenkins Basics Demo – Freestyle Job
6. Docker in Jenkins
7. Freestyle to Pipeline Job
8. Intro to Pipeline Job
9. Jenkinsfile Syntax
10. Create complete Pipeline
11. Intro to Multibranch Pipeline
12. Jenkins Jobs Overview
13. Credentials in Jenkins
14. Jenkins Shared Library
15. Webhooks – Trigger Pipeline Jobs automatically

8. Kubernetes

1. Intro to Kubernetes
2. Main Kubernetes Components
3. Kubernetes Architecture
4. Minikube and kubectl – Local Kubernetes Cluster
5. Main kubectl commands
6. YAML Configuration File
7. Deploying Application in Kubernetes Cluster
8. Namespaces – Organizing Components
9. Services – Connecting to Applications inside cluster
10. Ingress – Connecting to Applications outside cluster
11. Volumes – Persisting Application Data
12. ConfigMap & Secret Volume Types
13. StatefulSet – Deploying Stateful Applications
14. Managed Kubernetes Services
15. Helm – Package Manager for Kubernetes
16. Helm Demo – Managed K8s cluster
17. Deploying Images in Kubernetes from private Docker repository
18. Kubernetes Operators for Managing Complex Applications
19. Helm and Operator Demo
20. Secure your cluster – Authorization with RBAC
21. Microservices in Kubernetes

9. Kubernetes on AWS (EKS)

1. Container Services on AWS
2. Create EKS cluster with AWS Management Console
3. Configure Autoscaling in EKS cluster
4. Create Fargate Profile for EKS Cluster
5. Create EKS cluster with eksctl command line tool
6. Deploy to EKS Cluster from Jenkins Pipeline
7. BONUS: Deploy to LKE Cluster from Jenkins Pipeline
8. Jenkins Credentials Note on Best Practices
9. Complete CI/CD Pipeline with EKS and DockerHub
10. Complete CI/CD Pipeline with EKS and ECR

10. Terraform

1. Introduction to Terraform
2. Install Terraform & Setup Terraform Project
3. Providers in Terraform
4. Resources & Data Sources
5. Change & Destroy Terraform Resources
6. Terraform commands
7. Terraform State
8. Output Values
9. Variables in Terraform
10. Environment Variables in Terraform
11. Create Git Repository for local Terraform Project
12. Automate Provisioning EC2 with Terraform
13. Provisioners in Terraform
14. Modules in Terraform
15. Automate Provisioning EKS cluster with Terraform
16. CI/CD with Terraform
17. Remote State in Terraform

11. Monitoring (Prometheus & Grafana)

1. Introduction to Monitoring with Prometheus
2. Install Prometheus Stack in Kubernetes
3. Data Visualization with Prometheus UI
4. Introduction to Grafana
5. Alert Rules in Prometheus
6. Create own Alert Rules
7. Introduction to Alertmanager
8. Configure Alertmanager with Email Receiver
9. Trigger Alerts for Email Receiver
10. Monitor Third-Party Applications
11. Deploy Redis Exporter
12. Alert Rules & Grafana Dashboard for Redis
13. Collect & Expose Metrics with Prometheus Client Library
14. Scrape Own Application Metrics & Configure Own Grafana Dashboard