**Introduction to DevOps**

What is Devops Workflow

Software Development with and without DevOps

Basic Overview of DevOps Tools

**Git -VCS**

What is Version Control System – Git Overview

Git in Action – Git-Workflow

GitHub – Working with Remote Repositories

Collaboration – Working with Other Developers

Git Branches and Merging

**AWS – Working with Basic AWS services.**

Introduction to Cloud Computing on AWS

AWS Basics – Global Infrastructure, Management Console, IAM, AWS CLI

Compute Services - Amazon EC2 (Elastic Compute Cloud)

Storage Services - Amazon S3 (Simple Storage Service), Amazon EBS (Elastic Block Store)

Database Services - Amazon RDS (Relational Database Service), MySQL

Networking - Amazon VPC (Virtual Private Cloud), Route 53 (Domain Name System)

Kubernetes - Elastic Kubernetes Service (Amazon EKS), Load Balancing, Autoscaling

AWS EKS Managed Node Groups (MNG) will not just manage your EC2 instances, but create them from the outset. Amazon EC2 Auto Scaling groups—which span specified subnets—provision all managed nodes. There is no premium price for using MNGs, only the resources allocated to them. They can be launched in private and public subnets. All instances in these groups deploy on Amazon Linux 2 AMIs. There can also be multiple managed node groups inside one cluster.

**SonarQube**

SonarQube Introduction

Installation and Console Overview

Integrating with Jenkins

**Jenkins**

Jenkins Overview

CI-CD Overview – Jenkins as an Automation Server

Integrating tools and Plug-ins into Jenkins

Working with Jenkins

**Docker**

Docker Overview – Software Development with Docker

Working with Docker – docker run and other commands

Working with Docker Images – Docker Hub

Docker Registry, Docker Engine

Storage and Networking in Docker

Docker Compose and Docker Swarm

**Kubernetes**

Kubernetes Overview – Features and Advantages

Kubernetes Concepts – Architecture; PODs, Replica Sets and Deployments, Services

Networking in Kubernetes, Micro Services Architecture

Kubernetes on Cloud

**Ansible**

Ansible Overview – Architecture and Components

Ansible Playbooks and Modules

Introduction to YAML

Multi-Tasking with Ansible, Variables, Notify and Handlers

Ansible Vault and Roles

**Terraform**

Infrastructure as a Code – Terraform Overview

Terraform Architecture, Components and Workflow

Terraform Setup – Working with AWS

Working with Terraform – state file, providers, variables, and modules.

**Grafana**

Continuous Monitoring in DevOps

Introduction to Grafana

Getting Started with Grafana

Dashboard and Variables

**CI-CD using Git, Maven, Jenkins, Docker, Ansible and Kubernetes**

Building a complete Ci-Cd pipeline to deploy an Apache Tomcat based Application using Git, Maven, Jenkins, Docker, Ansible and Kubernetes

**CI-CD using AWS Tools**

AWS Code Pipeline

AWS Code Build

AWS Code Deploy

AWS Code Commit

AWS Cloud Formation

AWS Lambda

AWS Cloud Watch

**Project Work**