**DevOps with AWS**

**Lesson 1: Introduction**

* Business Perspective
* IT Perspective
* Developer Perspective
* Tester Perspective
* Operations Perspective

**Lesson 2: SDLC MODEL**

• Definition

• Stakeholders of DevOps

• What is SDLC

• Phases of SDLC

• Role Of Dev in SDLC

• Role of Ops in SDLC

**Lesson 3: Agile & Scrum Model**

* Agile Development Process
* Agile Manifesto
* Agile Scrum Work Flow
* Agile Analysis Estimation Techniques
* Types of Roles and Responsibilities
* Problem That DevOps Solves
* Making a DevOps Transition
* Introduction to DevOps Automation

**Lesson 4: DevOps Lifecycle**

* Introduction
* Tools
* DevOps Technology Categories
* Collaboration
* Planning
* Issue Tracking
* Monitoring
* Configuration Management
* Source Control
* Dev Environments
* Continuous Integration
* Continuous Testing
* Continuous Deployment

**Lesson 5: Red Hat Linux**

* What is Operating system
* What is Unix, Linux
* Unix vs Linux
* Linux vs Windows
* Linux market trends
* Linux flavors
* Linux Architecture
* What is shell kernel command line utilities
* Linux Boot process
* Linux commands
* Linux admin level commands
* Reading files
* Redirection operators
* User management
* Group management
* File system management
* Linux volume manager hands on
* Linux installation using iso
* Directory structure
* Editors
* VMware overview

**Lesson 6: Shell Scripting**

* Shell history and introduction
* Types of shells
* Shebang line in shell
* Command line arguments
* Variables
* Types of Operators
* Loops
* Case statement
* Functions

**Lesson 7: Cloud Computing**

* What is Cloud
* Why Cloud?
* Types of Cloud Deployment Models
* Types of Cloud Services
* Future of Cloud Technologies
* Advantages and Disadvantages of Cloud

**Lesson 8: Introduction to AWS (Amazon Web Services)**

* What is AWS?
* How to Subscribe for AWS account
* What is the AWS Free Usage Tier
* AWS Certification
* Introduction to the AWS management Console
* List of services given by AWS

**Lesson 9: Elastic Cloud Compute (EC2)**

* What is Amazon EC2?
* Features of Amazon EC2
* Managing the EC2 infrastructure
* EC2 Dashboard
* Pricing for Amazon EC2
* Instance Type
* Instance life cycle
* Differences between reboot, stop, and terminate
* Building an EC2 windows and linux instances
* To install instance in public and private subnet
* Security via Key Pairs
* EC2 Class and VPC Security Groups
* Managing Elastic IP's
* Pricing model in EC2 instances
* EC2 with Amazon command line interface
* Describing Regions
* Availability Zones, and Endpoints
* Managing instances in an Availability Zone

**Lesson 10: Amazon Machine Image (AMI)**

* Introduction to AMI
* Creating AMI
* Managing AMIs
* Working with Windows, Linux AMIs
* Different Locations AMI
* Shared and Paid AMI
* Making an AMI Public
* Hands on

**Lesson 11: Elastic Block Storage (EBS)**

* Features of Amazon EBS
* Amazon EBS volumes
* Managing EBS volumes
* Increasing the volume size
* Amazon EBS snapshots
* Moving Snapshots
* Hands on

**Lesson 12: Elastic Load Balancer (ELB)**

* Creating a load balancer
* Internal and external load balancer
* Load balancing protocols
* Security groups for the load balancer
* Health check for the load balancer
* Creating a Target Group
* Attaching a Target Group
* Managing Target Group

**Lesson 13: Auto Scaling Group (ASG)**

* What is auto scaling?
* Auto scaling components
* Creation of launch configuration
* Configuration of auto scaling policies
* Creating a Launch Template
* Modifying Launch Templates
* Interchanging Launch Templates
* Advantages of using auto scaling with ELB

**Lesson 14: Virtual Private Cloud**

* What is Amazon VPC?
* VPC Essentials
* Default and Nondefault VPC
* VPC Networking and ACL
* Security Groups
* DNS and DHCP Options Sets
* VPC Peering and Endpoints
* Subnet Routing
* VPC Internet Gateway
* Elastic IP addresses and network interfaces
* VPC integration with many other AWS services
* Creating a NAT instance in a VPC
* Configuring a Web application in VPC
* Pricing for Amazon VPC
* Security Groups
* Elastic IPs
* Placement Groups
* Key Pairs
* Network Interfaces

**Lesson 15: Amazon Route 53**

* Route 53 as your DNS service
* Using Traffic Flow
* Route 53 Health Checks
* Configuring DNS Failover
* Latency Based Routing
* Weighted Routing Policies
* Hosting web portal using Route53
* Creating Domain in Freenom
* Adding Naming Servers
* Hands On

**Lesson 16: Identity and Access Management (IAM)**

* IAM Features
* Getting Started With IAM
* Creation of user, groups, roles
* Managing & Writing policies
* Credential Report
* Creating Access keys
* Creating Secret Access Keys
* Activate Regions
* Managing Regions
* IAM Console and the Sign-in Page

**Lesson 17: Simple Secure Storage (S3)**

* What is object Storage?
* Data as objects
* Lifecycles of S3
* Managing Buckets
* Accessing S3 storage via tools
* S3 Replication
* Versioning
* Bucket Permissions
* Object Permissions
* Metrics
* Access Points
* Object Lock
* Creation of a static website using S3 storage

**Lesson 18: Relational Database Systems (RDS)**

* RDS Essentials
* Launching RDS instance
* Selecting the Engine
* Configuring the Database Engine
* Setting of Automatic Backups
* Installing MySql
* Authorizing access to DB
* Connecting to Endpoint
* Managing RDS Database

**Lesson 19: Amazon Cloud Watch**

* Amazon Cloud Watch Architecture
* List of services monitored by Cloud Watch
* Collect and track metrics
* Monitoring memory and disk Metrics
* Monitoring logs, Graphs
* Creating Dashboards
* Analyzing time intervals
* Set Alarms

**Lesson 20: Simple Notification Services**

* Simple Notification Service overview
* SNS architecture
* Publishers and subscribers
* Creation of a topic
* Subscribing to topic via Email
* Setting notification for EC2 instance changes

**Lesson 21: Elasti Cache**

* Redis Introduction
* Redis Parameters Groups
* Redis Endpoint
* Redis Port No.
* Redis Backup
* Redis Cache Configuration
* Memcache Introduction
* MEMCache Configuration
* MemCache Endpoint
* Hands On

**Lesson 22: GIT – GitHub & Bitbucket**

* Introduction
* What is a Version Control System (VCS)? Distributed Vs Non-distributed VCS
* What is Git
* Alternatives to Git
* Installation and Configuration
* Obtaining Git Installing Git
* Common configuration options GUI tools
* Key Terminology
* Clone Working Tree Checkout Staging area Add
* Commit Push Pull Stash
* Git - Local Repository Actions Creating a repository (git init) Checking status (git status)
* Adding files to a repository (git add) Committing files (git commit) Removing staged files (git reset) Removing committed files (git rm) Checking logs (git log)
* Git - Remote Repository Actions Creating a remote repository (git init) Cloning repositories (git clone)
* Updating the remote repository from the local (git push) Updating the local repository from the remote (git pull)
* Tagging in Git What are Git Tags? Listing tags Lightweight tags
* Displaying tag details (tag show) Annotated tags
* Checking out tags Pushing tags Pulling tags
* Branching in Git
* What is a branch
* A note about <HEAD> Listing branches Create new branch Checkout branch Pushing branches Pulling branches Merging in Git
* Fetching Changes (git fetch) Rebasing (git rebase)
* Git Pull
* Git Workflows Different ways of using Git Centralized
* Feature Branch Gitflow Workflow Forking Workflow

**Lesson 23: Maven Build Tool**

* Issues before in manual process of build process
* Automated build process
* Introduction
* Maven Structure and Installation
* Maven Dependencies
* Maven Repositories
* Maven Plug-ins
* Maven Configuration
* Integration with SCM tools
* Maven Project

**Lesson 24: Jenkins CI/CD TOOL**

* Introduction
* How to install and configure Jenkins
* How to achieve Continuous Integration with Jenkins
* Jenkins Jobs
* How to schedule jobs in Jenkins
* How to integrate Jenkins with Ant
* How to integrate Jenkins with Maven
* How to integrate Jenkins with Slack
* How to integrate Jenkins with Shell scripts
* How to integrate Jenkins with Python scripts
* Jenkins dashboard
* Jenkins authentication
* Jenkins plugins – how to download and use
* Parameterizing the build
* One click regression
* Overview of Continuous Integration (CI)
* What it means Continuous Integration? Fundamental of CI
* How CI helps to Agile Development History of Jenkins
* Where Jenkins Fit in Organization Overview of Jenkins community
* Setup and Running Jenkins
* Prerequisites
* Preparing Environment Installing Git
* Setup Account
* Install Jenkins on Ubuntu / Windows Configuring a Node
* Running Jenkins as Stand-Alone/ Apache Server Backup Jenkins data
* Configuring Jenkins server
* Configure Dashboard Configure System Environment Global Properties
* Configure Build Tools Configure Proxy
* Working with Jenkins Build Job
* Create and Configure a job Run a job manually Triggering a Build Scheduled Build job Manual Build job
* Polling SCM
* Maven and ANT Build Step Execute a Shell

**Lesson 25: Configuration Management Tool CHEF**

* What is Chef
* Common Chef Terminology
* Chef Server
* Chef Workstation
* Chef-Repo
* Chef-Client
* Server and Nodes
* Chef Configuration Concepts
* Chef Architecture
* What are Data Bags?
* Creating user and sudo Group Data Bags
* Building a recipe to deploy local user accounts From Data Bags
* What are Environments and why do they matter
* Creating & Configuring Environments
* Deploying to Different Environments
* Viewing and Environments with Knife
* What are Roles
* Creating A web server Role
* Creating Db Server Role
* Creating a Base Role

**Lesson 26: Docker Containers**

* Installing Docker on Windows
* Installing Docker on Linux
* What is container
* Docker run command
* Theory of pulling and Running Containers
* Working with images
* Docker Files
* Container Life cycle
* Creating Docker Hub Profile
* Processes of Containers
* Running Micro Service
* Pushing Docker files to Docker Hub

**Lesson 27: Elastic Container Service (ECS)**

* Elastic Container Service overview
* Creating Clusters
* ECS Task definitions
* Managing Containers
* ECS Nodes
* ECS MonitoringProcesses of Containers
* ECS Hands on

**Lesson 28: Elastic Kubernetes Service (EKS)**

* Introduction to EKS
* Creating EKS Cluster
* Configuring IAM Authenticator
* Installing Kube-ctl
* Configuring Kube-ctl
* Creating Worker Nodes
* Managing Yaml
* Creating PODS
* How pods works
* Installations and configuration kubernetes cluster
* Pod lifecycle
* Work with pods
* Work Services
* Work Deployment
* Deploying Service on Pods

**Lesson 29: Vagrant**

* Virtual Box Installation
* Vagrant Installation
* Vagrant without Virtual Box
* Vagrant Machine
* Vagrant Files
* Boxes
* Running Vagrant Machines
* SSH to Vagrant Machine
* Synced Folders
* Networking Basics
* Environment Management

**Lesson 30: Terraform**

* Introduction to Terraform
* Terraform Fundamentals
* Terraform Configuration Basics
* Terraform Scripting
* Terraform stacks
* Terraform State Files
* Setup Module
* Building Infrastructure Using Terraform
* Managing Terraform Automation
* Deploying using Terraform