

Total Session Hours: 45 Hrs.

1. Introduction to DevOps

- What is DevOps?
- DevOps Responsibilities
- Continuous Integration
- Continuous Delivery & Deployments
- Configuration Management & Monitoring
- Microservices & Containerization
- Advantages of DevOps
- DevOps Jobs & Future

2. Docker - Containerization

- Introduction to Dockers & Microservices
- Docker vs VMs
- Microservices Architecture
- Monolithic applications
- Why Dockers & benefits
- Dockerizing Applications using Docker Instructions
- Docker Architecture & Demons
- Container creation and management
- Docker Volumes
- Docker Networks
- Dockerfile
- Docker Compose

3. Kubernetes In Production

- Introduction to Kubernetes
- Understanding Kubernetes architecture
- Setting Kubernetes cluster
- Kubernetes, Pod, Service, Deployment, Replica Set
- Deployment strategy
- Configmap
- Kubernetes Managing Secrets
- Kubernetes Namespaces

- Liveness & Readiness probes
- Node selector
- Node Affinity
- Taints and tolerations
- helm for package manager
- Monitoring Kubernetes Nodes and Pods
- Networking and DNS
- Volumes, Persistent Volumes & Volume Claims

4. Ansible - Configuration Management

- Introduction to Ansible
- Ansible vs other tools
- Learning YAML & Writing Playbooks
- Writing reusable modules using Ansible roles
- Ansible Facts, Syntax checking, Exception Handling
- Ansible loops & Conditions
- Static & Dynamic inventory
- Hosts Groups Variables & Group Variables
- Ansible connection types
- Encrypting sensitive data using Vault
- Ansible rolling deployments.
- Ad-hoc commands
- Writing Playbooks
- Automating SQL deployments
- Limiting playbook executions by hosts and tags
- Writing reusable playbooks
- Ansible modules
- Dynamic includes
- Including plays and tasks
- Dry-runs tags, Conditions loops

5. Introduction to Version Control System

- Git with GitHub/Bitbucket
- Benefits of SCM tools
- Installation & Configuration

- Mattering using git for DevOps activities
- Clone, Push, Fetch, Revert, Reset, HEAD, Diff
- Reviewing and Merging with “Pull Request”
- Managing Branches & Branching Strategies
- Managing Branch permissions
- Git Init & Git fork
- Resolving Merge Conflicts using diff merge tool
- Merging Strategies
- Git Tags
- Stash, Rebase, Checkout & Cherry-Pick

6. Maven - Build Tool

- Introduction to build tools
- Importance of build tools
- Going through pom.xml
- Working with build commands
- Build life cycles, Maven Plugins
- Understanding artifacts
- Maven Repositories
- Maven dependency management
- Integrating with Sonatype Nexus
- Integrating with Docker

7. Managing Artifacts

- Installing Sonatype Nexus
- Configuring Nexus as a Service
- Managing maven dependencies
- Storing Docker Images

8. Jenkins - Automation Tool

- Jenkins Installation & Configuration
- Creating Freestyle and Pipeline Jobs
- Advanced Jenkins Pipeline Jobs (Groovy DSL)
- Parameterized builds, Build Triggers
- Configuring GitHub Webhooks

- Running Parallel Tasks
- Master Slave Configurations
- Managing Users Permissions, Plugins
- Managing Credentials
- Managing Tools (Git, Maven, Docker, Ansible)
- Email & Slack Notifications
- Automating deployments to Kubernetes cluster.
- Implementing CI & CD using Docker, Ansible, Nexus & Kubernetes
- Git Maven & Docker Integration
- SonarQube Integration
- Maven Nexus Integration

9. Linux Essentials for DevOps

- Linux fundamentals
- Linux important commands
- Managing Users Groups & Permissions
- Linux troubleshooting commands.
- Password less Authentication
- Troubleshooting Issues
- ssh, scp, ps grep sed & find.
- Package managers (RPM & YUM)
- top netstat vmstat & vi editors