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## Course: Devops Training

Duration: 70 Hrs (Changeable) | Fees: Individual / Batch

Since 2007, Nestsoft TechnoMaster has been providing training, internships, and services in IT technologies, both online and offline, with the expertise of **over 250 industry experts**. We have delivered internships, training, and seminars to more than 50,000 students, resulting in numerous success stories. **We offer 100% placement support through JobsNEAR.in**

### Our Courses/Internship

- Python/Django Fullstack
- Artificial Intelligence
- Machine Learning
- Data Science
- Software Testing (All)
- Wordpress, Woocommerce
- Digital Marketing, SEO
- Php/MySQL, Laravel
- Flutter, Android, IOS
- Asp.net MVC
- Web Design, Javascript
- Angular JS, React JS
- CCNA, MCSA, CCNP
- AWS, GCP, Azure
- Odoo, Salesforce, Sap
- Microsoft Excel
- Ethical Hacking



Syllabus on the Next Page ..



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### DevOps Overview

- \* Waterfall, Agile and DevOps
- \* DevOps (What, Why, Benefits)
- \* Overview – CICD

### AWS Fundamentals

- \* Physical and Virtual Servers
- \* Public/Private Cloud Computing
- \* AWS/Azure/GCP (OV)
- \* Benefits of Cloud Computing
- \* Pricing and Usage Policy
- \* IAM Service EC2 Service
- \* RDS Service Cloud Storages
- \* Elastic IP, CloudFront and ELB (OV)


### Practical

- \* AWS Free Tier Account Creation
- \* IAM User Creation
- \* EC2 Instance Creation
- \* Security Group Configuration
- \* Creation of database using RDS
- \* Connecting Ec2 Instance
- \* Connecting database
- \* Creation of S3 storage

### Linux Fundamentals

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- \* Linux
- \* Linux Architecture
- \* Linux Distributions
- \* Basic Linux Commands
- \* File Permission Management
- \* User CreationShell Scripts
- \* SSH and VI Utility

## Practical

- \* Creation of User
- \* Establishing SSH Connection to the Server
- \* File creation and Manipulation using VI editor
- \* Managing permissions
- \* Basic commands execution
- \* Writing Shell Scripts ProgramJava Concepts
- \* Build Tools “ Maven
- \* Python
- \* SQL

## Git and GitHub

- \* Version Control System
- \* Central vs Distributed Version Control System
- \* Introduction to Git
- \* Installation and setting up Git

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- \* Important Git Commands
- \* Creating and Managing git Repositories
- \* Branching, Merging, Stashing, Rebasing, Reverting and Resetting
- \* Introduction to GitHub Managing Remote Repositories

### **Practical**


- \* Installation and Configuration of git
- \* Creating Git Repositories
- \* Demonstrating various Git repositories
- \* Merging Branches and Managing merge conflicts
- \* Stashing, Reverting, Rebasing and Resetting
- \* Collaborating local and remote repositories


### **Jenkins :-**

- \* Overview of Continuous Integration
- \* Difference between Continuous vs Traditional Integration
- \* Overview of Jenkins
- \* Jenkins Master-Slave Architecture
- \* Jenkins Installation and Configuration
- \* Jenkins Plugins Jenkins Management
- \* Jenkins Freestyle and Pipeline Jobs
- \* Scripted and Declarative Pipelines
- \* Configuring Slave Node to Jenkins

### **Practical :**

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- \* Installation and Configuration of Jenkins
- \* Configuration of Tools
- \* Configuration of Plugins
- \* Creation of Freestyle Jobs, scripted and declarative pipeline jobs
- \* Demonstrate pipeline triggering using GitHub webhooks
- \* Scripted and Declarative pipelines
- \* Integration of Code Coverage Tools and Static Code analysis tools
- \* Triggering pipelines using Git Web Hooks
- \* Creation of CICD pipelines
- \* Adding slave node to Jenkins

### **Docker, and Docker Hub**

- \* Introduction to Virtualization and Containerization
- \* What is Containerization Docker Architecture
- \* Docker Hub (OV)
- \* Docker Installation
- \* Docker Commands
- \* Container Modes
- \* Port Binding
- \* Docker file
- \* Managing Docker Images
- \* Running and Managing Containers
- \* Docker Volume

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- \* Docker Compose
- \* Overview of Docker Swarm
  - Practical : Installation of Docker and Docker Compose on AWS EC2
- \* Running Docker Commands
- \* Writing Docker Files for various applicationsBuilding Docker Images
- \* Pushing Images to Docker HubRunning Docker Containers
- \* Container Port Binding
- \* Running multiple containers using Docker Compose file
- \* Persisting container data using Docker Volume
- \* Initialize a docker swarm and demonstrate workload deployments

## Kubernetes

- \* Overview of Container Orchestration
- \* Different between Docker swarm and Kubernetes Cluster
- \* Kubernetes Architecture
- \* Installation of Kubernetes “ Minikube and EKS
- \* Kubernetes NodesKubernetes Pods
- \* Kubernetes Deployments
- \* Rolling updates and rollbacks
- \* Scaling up and down of the application
- \* Services in Kubernetes
  - Practical:Installation and configuration of Kubernetes Minikube
- \* Creation of Pods and Deployments using ad-hoc Commands

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- \* Creation of Pods and Deployments using YAML files
- \* Scaling up and Scaling Down of the application
- \* Rolling out Deployments and Rolling Back
- \* Creation of Services Configuration Automation using Ansible
- \* Overview of Configuration Automation
- \* Introduction to Ansible
- \* Ansible Architecture
- \* Components of Ansible
- \* Installation and Configuration of Ansible
- \* Ansible ad-hoc commands
- \* Ansible Playbooks
- \* Ansible Variables
- \* Ansible Handlers
- \* Ansible Role using Ansible Galaxy


### **Practical:**


- \* Installation and Configuration Ansible
- \* Running Ansible ad-hoc commands.
- \* Writing Ansible Playbooks to Configure Servers
- \* Creating Ansible Roles

### **Terraform**

- \* Introduction to Terraform
- \* Terraform Vs Ansible

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- \* Terraform Architecture
- \* Terraform Configuration
- \* Terraform Commands
- \* Managing Terraform Resources
- \* Terraform End to End Project

### **Practical:**

- \* Installation of Terraform on AWS EC2 Instance
- \* Writing Terraform Configuration
- \* Creation of AWS EC2 instance using terraform
- \* Managing AWS resources using terraform
- \* End to End Infrastructure Creation Project.


### **Prometheus and Grafana**


- \* Overview of continuous monitoring
- \* Continuous monitoring tools in DevOps
- \* Installation and Configuration of Prometheus and Grafana
- \* Prometheus Architecture
- \* Monitoring using Prometheus
- \* Dashboard visualization using Grafana

### **Practical**

- \* Installation and Configuration of tools
- \* Monitoring Targets using Prometheus
- \* Visualizing Reports using Grafana

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### Project / Internship (Any)

### Syllabus 1. Introduction to DevOps

#### Overview

- \* : Understanding the DevOps philosophy and its
- \* significance in modern software development.

#### Key Concepts

- \* : Continuous Integration (CI), Continuous Deployment (CD),
- \* and the DevOps lifecycle.

### 2. Version Control Systems

#### Git: Mastering Git commands, branching strategies, and collaboration workflows. GitHub/GitLab

- \* : Utilizing platforms for repository management and team collaboration.

### 3. Continuous Integration and Continuous Deployment (CI/CD)

Jenkins: Setting up pipelines, automating builds, and integrating testing.

Azure DevOps: Implementing CI/CD pipelines using Azure services.

### 4. Configuration Management

Ansible: Automating infrastructure provisioning and configuration.

Chef/Puppet: Managing system configurations and deployments.

### 5. Containerization and Orchestration


Docker: Creating, managing, and deploying containerized applications.

Kubernetes: Orchestrating container deployments, scaling, and management.

### 6. Infrastructure as Code (IaC)

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Terraform: Defining and provisioning infrastructure using code.

CloudFormation: Managing AWS resources through templates.

## 7. Monitoring and Logging

**Prometheus: Collecting and analyzing metrics.**

Grafana: Visualizing data and setting up dashboards.

ELK Stack: Implementing Elasticsearch, Logstash, and Kibana for log management.

## 8. Cloud Platforms

**AWS: Exploring services like EC2, S3, and Lambda.**

Azure: Utilizing Azure services for DevOps practices.

Google Cloud Platform (GCP): Leveraging GCP services in DevOps workflows.

## 9. Security in DevOps

DevSecOps: Integrating security practices into the DevOps pipeline.

Vulnerability Assessment: Identifying and mitigating security risks.

## 10. Testing Automation

**Selenium: Automating web application testing.**

JUnit/TestNG: Implementing unit testing frameworks.

## 11. Collaboration and Communication

Agile Methodologies: Applying Agile principles in DevOps.


Tools: Using Jira, Confluence, and Slack for team collaboration.


## 12. Case Studies and Real-World Applications

Industry Examples: Analyzing successful DevOps implementations.

Best Practices: Learning from real-world scenarios and challenges.

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**- Thank You -**

N.B: This syllabus is not final and can be customized as per requirements / updates.

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