



## DevOps Certification Syllabus

Dear Engineers,

Class SP23

Your training will be offered by a dedicated and experienced team of academics and professionals in the field, within a 5-month period. We will offer hands-on training and tutorials during each session. Our training approach from basic (i.e. beginners with no prior knowledge) to expert working skills and knowledge in the topics below will help students to achieve more. For each topic, students will learn the underpinning concepts/tools and will be provided with:

- 1) Unedited live video recordings of each session
- 2) Soft copy materials of each session
- 3) Use of case scenarios
- 4) Sample interview questions
- 5) Supplementary materials, including labs where applicable.

### Topic One - Introduction

- 1) Housekeeping for Online Sessions
- 2) What is DevOps?
- 3) Why DevOps / End-to-End Automation?
- 4) DevOps Model & Tools
- 5) Careers for DevOps
- 6) Software Development Life Cycles (SDLC)
- 7) Waterfall Model
- 8) Agile Methodology
- 9) Scrum Model
- 10) DevOps Learning Requirements at SudoBarn Technologies
- 11) Tutorial 1
- 12) Access to Sessions & Learning Materials
- 13) Prerequisites for next session

**PLUS Agile/Scrum/DevOps  
Concepts & Practice**

### Topic Two – LINUX SYSTEM

- 1) Introduction to Operating Systems (OS)
- 2) Tasks Execution on Computers
- 3) Installing SSH Tools and FTP Tools in Desktop/Laptop.
- 4) Creating an account in AWS.
- 5) Creating EC2 Instance in AWS
- 6) Linux File & Directory Structure
- 7) Linux Command Line & Commands
- 8) Tutorials & Prerequisites for next session





### **Topic Three – Shell Scripting**

- 1) Introduction
- 2) What is Shell?
- 3) Types of Shells
- 4) What is Shell Scripting?
- 5) First Shell Script program
- 6) File Naming Conventions
- 7) Comments
- 8) Variables
- 9) Command line Arguments
- 10) Escape Characters
- 11) String
- 12) Arithmetic Operations
- 13) User Interaction using read command.
- 14) Input and Output Redirection
- 15) Control commands – if
- 16) Control commands – for
- 17) Control commands - while loop
- 18) Control commands - Switch case
- 19) Functions
- 20) Pipe

**PLUS Coding for Beginners  
and Labs**

### **Topic Four – Git & GitHub**

- 1) What is Git?
- 2) What is the VCS?
- 3) What is SCM?
- 4) What is Branch?
- 5) What is Tag?
- 6) Git Administration.
- 7) Git commands
- 8) Working with git as a developer perspective
- 9) SSH Key generation
- 10) PAT creation
- 11) Cloning Repositories
- 12) Merging Branches
- 13) Branching strategy
- 14) Best practices for Releases/Code commits in any VCS

### **Topic Five – Maven**

- 1) Introduction
- 2) Features & Benefits of Maven
- 3) Installation (Maven Environment Setup)
- 4) Directory Structure
- 5) Content of pom.xml



- 6) Maven Repositories
- 7) Maven Life Cycles
- 8) Executing some Examples
- 9) Maven Multi Modules

### **Topic Six – Tomcat**

- 1) Introduction
- 2) Difference between App server and Web server
- 3) Understanding of Web Servers, App Servers and DataBase Servers
- 4) Installation (In Windows - Extraction, In Linux Installation)
- 5) Directory structure
- 6) Start the Tomcat server
- 7) Users creation
- 8) Stop the server
- 9) Roles
- 10) Port number change
- 11) Application Deployment
- 12) Tomcat Tuning
- 13) Data source Creation
- 14) Load Balancing with Nginx

### **Topic Seven – SonarQube**

- 1) Introduction
- 2) Pre-Requisites
- 3) Architecture
- 4) Installation
- 5) Change the Port Number
- 6) Execution
- 7) Administration

### **Topic Eight - Apache HTTP Server**

- 1) Introduction
- 2) Installation
- 3) Directory Structure
- 4) Start the HTTP server
- 5) Deploy the web static application.

### **Topic Nine - Nexus**

- 1) Introduction
- 2) Installation
- 3) Nexus Directory structure
- 4) Create the Repositories
- 5) Integrate Maven with Nexus
- 6) Create Users



## Topic Ten – New Relic, Grafana & Prometheus

- 1) Introduction
- 2) Creating Synthetic Monitors
- 3) Creating Channels
- 4) Creating Alerts
- 5) Integrating with Slack

## Topic Eleven – Jenkins

- 1) Introduction
- 2) Installation
  - i. In Linux Server
- 3) Create the Maven Project using Freestyle Project type
  - i. Integrate Nexus with Jenkins
  - ii. Integrate SonarQube with Jenkins
  - iii. Deploy the App into Tomcat
  - iv. Through "Deploy to container" plugin
  - v. Through Script - SSH Agent Plugin
  - vi. Configure Email Functionality
  - vii. Poll SCM
  - viii. Build Periodically
  - ix. Git Web Hooks
  - x. Discard Old Build
  - xi. Disable this project
  - xii. Delete workspace before build starts
  - xiii. Add timestamps to the Console Output
  - xiv. JACOCO plugin
- 4) Jenkins Directory structure
- 5) Create the Maven Project using Maven Project type
- 6) Plugin Management
- 7) External Plugins Installation
  - i. Urban Code Deploy
- 8) Port Number Change
- 9) Build with parameters
- 10) Create View
- 11) Jenkins Security
  - i. Create Users (Default Admin)
  - ii. Provide the specific access Jenkins
  - iii. Provide the access to specific access to specific projects
- 12) Create the Pipeline Project Jobs  
<http://localhost:8080/env-vars.html/>
- 13) Create the Multibranch Pipeline Project Jobs
- 14) Create Master/Slave
- 15) Jenkins Backup
- 16) Jenkins Migration

**Plus Introduction to  
Cyber Security**



## Topic Twelve – AWS

- 1) Cloud & AWS
- 2) Managed and Self-Managed Infrastructures
  - IaaS
  - PaaS
  - SaaS
- 3) Elastic Compute Cloud (EC2)
  - Introduction to Amazon EC2
  - Launch EC2 Instance
  - How to use Putty (Windows Users Only)
  - Security Groups
  - EC2 Instance User Data.
  - Summary of EC2 Section
  - Amazon Machine Instance (AMI)
  - Elastic IP (EIP)
- 4) EBS
  - Volumes
  - Snapshots
- 5) EFS
- 6) Simple Storage Service (S3)
  - Creating S3 Buckets Using The Console and CLI
  - S3 Storage Options and Types
  - Create an S3 Website
  - S3 Version Control
  - Cross Region Replication
  - S3 Lifecycle Management & Glacier
  - S3 – Security, Snowball & S3 Summary
- 7) Elastic Block Store (ELB)
- 8) Auto Scaling
- 9) Virtual Private Cloud (VPC)
- 10) Identity Access Management (IAM)
- 11) AWS CLI (Command Line) Setup

**PLUS preparations towards AWS  
Solution Architect Certification**

## Topic Thirteen – Docker

- 1) Docker Introduction
- 2) Containerization Vs Virtualization
- 3) Docker Vs Virtual Machine
- 4) Docker Installation
- 5) Dockerfile
- 6) Docker Image
- 7) Docker Container
- 8) Docker Adhoc Commands



- 9) Docker Networks
- 10) Docker Volumes
- 11) Docker Keywords
- 12) Dockerfile Creation
- 13) Docker Images creation
- 14) Docker Images save to Dockerhub
- 15) Docker Private Repo
- 16) Docker Compose
- 17) Docker Swarm

#### **Topic Fourteen – Kubernetes**

- 1) Kubernetes Introduction
- 2) Architecture
- 3) Kubernetes Cluster (Self-Managed) Setup using Kubeadm
- 4) Kubernetes Namespace
- 5) Kubernetes Objects
- 6) HPA & Metrics Server
- 7) Kubernetes Cluster Setup in AWS using KOPS
- 8) EKS Kubernetes Cluster Setup using Terraform
- 9) Load balancer Service
- 10) Ingress Controller & Resource
- 11) Liveness & Readiness probes
- 12) Kubernetes RBAC
- 13) Kubernetes & Jenkins Integration
- 14) Kubernetes Dashboard Setup
- 15) Helm
- 16) Monitor Kubernetes using Prometheus and Grafana

**Additional Labs  
on Google Cloud  
Platform (GCP)  
by Equity Tech**

#### **Topic Fifteen – Ansible**

- 1) Introduction
- 2) Architecture
- 3) ssh-key generation
- 4) Copy SSH Key
- 5) Ansible adhoc Commands
- 6) Ansible Playbooks
- 7) Execution of Ansible Playbooks
- 8) Ansible Modules
- 9) Ansible Variables, Group/Host Variables
- 10) Loops & Conditions
- 11) Roles
- 12) Ansible Vault
- 13) Ansible Galaxy
- 14) Dynamic Inventory



### **Topic Sixteen - Infrastructure as a code (IaaS) with Terraform**

- 1) What is Terraform
- 2) Importance of Terraform over other IaaS tools
- 3) Terraform installation on Windows and Linux
- 4) Infrastructure automation using Terraform and Ansible

### **Topic Seventeen - Coaching & Mentoring**

- 1) Apprenticeships
- 2) CV & online profile preparation
- 3) Interview preparation
- 4) One-to-one sessions on career trajectory(ies)
- 5) Jobs posting
- 6) Ideation

### **Further Training (additional costs involved)**

- 1) Cyber Security Solutions
- 2) Digital Leader Certification
- 3) Coding (Intermediate & Advanced Levels)
- 4) Consulting - Business & IT
- 5) Project management, including IT
- 6) Webhost Solutions
- 7) Associate Cloud Computing (Engineering)
- 8) Professional Cloud Engineering

