



DEVOPS & CLOUD COMPUTING

Advanced Certification Program

In collaboration with



Microsoft

Understanding DevOps and Cloud Computing and its potential

Leverage the Microsoft Advantage With Professional Level Training From Microsoft

Exposure to prominent tools:





About the Course

Sky States devops and cloud computing program provides in-depth knowledge of various DevOps tools, including Git, Jenkins, Docker, Ansible, Terraform, Kubernetes, Prometheus, and Grafana.

This DevOps Certification training is fully hands-on and designed to help you become a certified practitioner by mastering best practices in Continuous Development, Configuration Management, Continuous Integration, and Continuous Monitoring throughout the software development lifecycle.

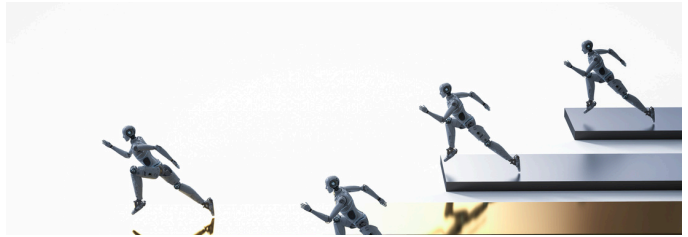
About Microsoft and Sky States Collaboration

Microsoft is a leading technology company offering a wide range of technology and consulting services. Each year, Microsoft invests heavily in research and development, with an annual R&D budget of over £20 billion. Microsoft has achieved numerous accolades, including three Turing Awards, 10 US National Medals of Technology and Innovation, and 10 US National Medals of Science. A partnership between Microsoft and Sky States introduces students to the best-in-class applied learning experience, making them experts in data and AI. In collaboration with Microsoft, this program delivers a top-notch, industry-relevant curriculum and prepares students for any job role in the DevOps domain.

WHY ARE DevOps & Cloud Computing important?

Faster Software Delivery

DevOps automates the development and deployment process, while cloud platforms provide scalable infrastructure – together, they enable quicker release of software and updates.



Career Growth

DevOps promotes teamwork between developers and IT operations. Cloud tools support remote collaboration, making it easier for teams to work efficiently from anywhere.



Cost Efficiency

Cloud computing reduces the need for expensive hardware by offering pay-as-you-go models. Combined with DevOps, this reduces overall operational costs.



Scalability and Flexibility

Cloud platforms allow businesses to scale up or down easily based on demand. DevOps ensures that this scalability doesn't interrupt the development or deployment processes.



Enhanced Security and Monitoring

Both DevOps and cloud services include tools for continuous monitoring, automated testing, and security checks – helping detect issues early and ensuring safe, stable applications.



Course Outline

Module 1: Overview of DevOps

Goal: In this module, you will be introduced to the DevOps environment.

Objectives:

After completing this module, you should be able to

- Understand the benefits of DevOps over other software development processes
- Gain insights into the DevOps environment
- Get an overview of different DevOps Tools
- Get a picture of the working of the DevOps Delivery Pipeline

Topics:

Introduction to DevOps

- Benefits of working in a DevOps environment
- DevOps Lifecycle
- DevOps Stages
- DevOps Delivery Pipeline

Module 2: Version Control with Git

Goal: In this module, you will gain insights into Source Control Management and learn the functionalities of Git.

Objectives

After completing this module, you should be able to

- Understand Version Control
- Perform management of files for small as well as large projects
- Perform various Git commands such as git add, git fetch, git commit, git init, etc.
- Work with remote repositories

Topics

- Version Control
- Git Introduction
- Git Installation
- Commonly used commands in Git
- Working with Remote repository

Hands-On

- Git Common Commands
- Working with Remote Repository

Module 3: Git, Jenkins & Maven Integration

Goal: In this module, you will learn about the different actions performed through Git and will be introduced to Jenkins and Maven.

Objectives

After completing this module, you should be able to

- Execute branching and merging operations
- Perform various Git commands
- Understand Maven Architecture and dependencies
- Learn about Continuous Integration & its importance
- Understand Jenkins and its features

Topics

- Branching and merging in Git
- Merge Conflicts
- Stashing, Rebasing, Reverting and Resetting
- Git Workflows
- Introduction to Maven
- Maven Architecture
- Introduction to Continuous Integration
- Introduction to Jenkins

Hands-On

- Branching and Merging
- Merge Conflicts
- Stashing, Rebasing, Reverting, and Resetting
- Configuring Maven

Module 4: Continuous Integration using Jenkins

Goal: In this module, learn how to perform Continuous Integration by building applications with the help of Maven and create deployment pipelines using Jenkins.

Objectives

After completing this module, you should be able to

- Managing authorization in Jenkins
- Jenkins notification management
- Master-slave architecture in Jenkins
- Add a slave node to Jenkins master
- Build and deploy codes using Jenkins
- Build pipeline plugin in Jenkins Use
- Declarative pipeline in Jenkins

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- Git Workflows
- Introduction to Maven
- Maven Architecture
- Introduction to Continuous Integration
- Introduction to Jenkins

Hands-On

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- Master-slave architecture in Jenkins
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- Build and deploy codes using Jenkins
- Build pipeline plugin in Jenkins Use
- Declarative pipeline in Jenkins

Topics

- Jenkins Architecture
- Plugin Management in Jenkins
- Jenkins Security Management
- Jenkins Master-slave architecture
- Jenkins Delivery Pipeline
- Jenkins Declarative pipeline

Hands-On

- Create pipeline view using DevCompile and QUnitTest
- Adding Slave node in Jenkins
- Build Pipeline project using Groovy script

Module 5: Configuration Management Using Ansible

Goal: Learn how to manage and configure your infrastructure using Ansible Ad-Hoc commands, Playbooks, and Roles.

Objectives

After completing this module, you should be able to

- Utilize Ansible CLI
- Execute Ansible Ad-Hoc Commands for one-off tasks
- Automate host servers using Ansible Playbooks
- Use Variables in Playbooks
- Using Handlers

Topics

- Introduction to Configuration Management
- Infrastructure as Code
- Introduction to Ansible
- Ansible Architecture
- Inventory Management
- Ansible Modules
- AD-HOC Commands
- Ansible Playbooks
- Ansible Roles

Hands-On

- Ad-Hoc Commands
- Running a Simple Playbook
- Using Variables and handlers
- Using Ansible Roles

Module 6: Containerization using Docker Part – I

Goal: This module introduces learners to the core concepts and technology behind Docker. Learn in detail about containers and various operations performed on them.

Objectives

After completing this module, you should be able to

- Understand Containerization
- Learn the evolution of virtualization to containers
- Understand the Docker Architecture
- Perform Various actions using Docker CLI
- Bind container ports to the Machine ports
- Run containers in different modes
- Write and build a Dockerfile to create a Docker Image

Topics

- Containerization
- Namespaces
- Docker
- Docker Architecture
- Container Lifecycle
- Docker CLI
- Port Binding
- Detached and Foreground Mode
- Dockerfile
- Dockerfile Instructions
- Docker Image

Hands-On

- Docker CLI Commands
- Port Binding
- Starting Containers in Different Modes
- Writing a Dockerfile to Create an Image

Module 7: Containerization using Docker Part – II

Goal: Learn how to use Docker Hub registry, deploy a multi-tier application using Docker Compose, and create a swarm cluster.

Objectives

After completing this module, you should be able to

- Use Docker Hub to store custom Images
- Store data in Container Volumes for persistent storage
- Setup Docker Compose

- Setting up Docker Hub
- Docker Volumes
- Installing Docker Compose
- Installing a Multi-Container Application using Compose
- Running Docker in Swarm Mode

Module 8: Orchestration using Kubernetes Part - I Goal:

Learn In this module, you will learn about Container Orchestration and Basic of container management using Kubernetes.

Objectives

After completing this module, you should be able to

- Understand Container Orchestration
- Learn about Kubernetes Core Concept
- Deploy Pods
- Create Deployments to manage Pods
- Launch DaemonSets for Background applications
- Update and Rollback your Deployments

Topics

- Introduction to Container Orchestration
- Kubernetes Core Concepts
- Understanding Pods
- ReplicaSet and Replication Controller
- Deployments
- DaemonSets
- Rolling Updates and Rollbacks
- Scaling Application

Hands-On

- Kubectl Common Commands
- Deployments
- DaemonSets
- Rolling-update and Rollbacks
- Scaling in Kubernetes

Module 9: Orchestration using Kubernetes Part - II

Goal: Learn and deploy different service discovery mechanisms, utilize Volumes for persistent storage and deploy StatefulSets for stateful applications.

Objectives

After completing this module, you should be able to

Topics

- Services
- Persistent Storage in Kubernetes
- Primitives for PersistentVolumeClaims
- Secrets and ConfigMaps
- Headless Services
- StatefulSets
- Helm Charts

Hands-On

- Deploying Services
- Persistent Volumes and Persistent Volume Claims
- StatefulSets
- ConfigMaps and Secrets
- Helm Charts

Module 10: Monitoring using Prometheus and Grafana

Goal: In this module, you will learn how to collect, monitor, and visualize data using Prometheus and Grafana.

Objectives

After completing this module, you should be able to

- Understand Continuous Monitoring
- Use Prometheus to monitor services
- Create an alerting mechanism using Prometheus
- Deploy Grafana dashboards to visualize data
- Integrate Prometheus and Grafana to monitor a full pipeline

Topics

- Prometheus and Grafana Setup
- Monitoring using Prometheus
- Dashboard Visualization using Grafana
- Creating a Dashboard to monitor the Pipeline
- Monitoring Service using Prometheus
- Alerting using Prometheus
- Grafana Dashboards
- Monitoring a Pipeline

Module 11: Provisioning using Terraform Part - I

Goal: Learn how to provision and manage infrastructure on a Cloud Platform (AWS) using Terraform Configuration Files.

Objectives

After completing this module, you should be able to

- Understand Provisioning using Terraform
- Learn the Difference between Terraform vs Ansible
- Understand Terraform Architecture
- Deploy a Terraform Configuration File
- Use Basic Terraform Commands
- Manage Terraform Resources

Topics

- Introduction to Terraform
- Terraform vs Ansible
- Terraform Architecture
- Terraform Configuration
- Terraform Common Commands
- Managing Terraform Resources

Hands-On

- Setting Up AWS and Terraform
- Executing a Terraform Configuration
- Managing Terraform Resources
- Referencing Terraform Resources

Module 12: Provisioning using Terraform Part - II

Goal: Use Terraform State commands to manage the current state of your infrastructure. Deploy a fully usable and working infrastructure using Terraform.

Objectives

After completing this module, you should be able to

- Perform Terraform State Commands
- Deploy a Terraform Project on AWS

Topics

- Terraform State
- Terraform Project

Module 13: Selenium (Self-Paced)

Goal: In this module, you will learn about selenium and how to automate your test cases for testing web elements. You will also get introduced to X-Path, TestNG and integrate Selenium with Jenkins.

Objectives

After completing this module, you should be able to

- Learn and install Selenium
- Create Test Cases in Selenium WebDriver
- Utilize X-Path and TestNG to locate elements
- Execute code on several browsers using Selenium suite of tools
- Integrate Selenium with Jenkins

Topics

- Introduction to Selenium
- Why Selenium?
- Selenium – Webdriver
- Creating Test Cases in Selenium WebDriver (Waits)
- What and why X-Path
- Handling different controls on Webpage

- Framework in Selenium
- Selenium Integration with Jenkins
- Implementation of Selenium in the Edureka's Project

Hands-On

- Installing Selenium
- Creating Test Cases in Selenium WebDriver
- Integrating Selenium with Jenkins

Module 14: Nagios (Self- Paced)

Goal: Learn how to continuously monitor your tasks using various plugins and implementing Nagios Commands

Objectives

After completing this module, you should be able to

- Operate Continuous Monitoring tools
- Use various plugins and objects associated with Nagios
- Implement Nagios commands

Topics

- Introduction to Continuous Monitoring

- Introduction to Nagios
- Installing Nagios
- Nagios Plugins(NRPE) and Objects
- Nagios Commands and Notification
- Installing Nagios
- Monitoring of different servers using Nagios

Module 15: DevOps on Cloud

Goal: Learn about various cloud services and service providers, also get the brief idea of how to implement DevOps using AWS

- Understand about cloud and its advantages
- Learn about Various cloud computing services
- Get an idea of how to implement DevOps using AWS

Topics

- Why Cloud?
- Introduction to Cloud Computing
- Why DevOps on Cloud?
- Introduction to AWS
- Various AWS services
- DevOps using AWS

Module 16: AWS EC2 and IAM

Goal: Get a brief idea of how Security and EC2 Compute service works in AWS Cloud.

Objectives

After completing this module, you should be able to

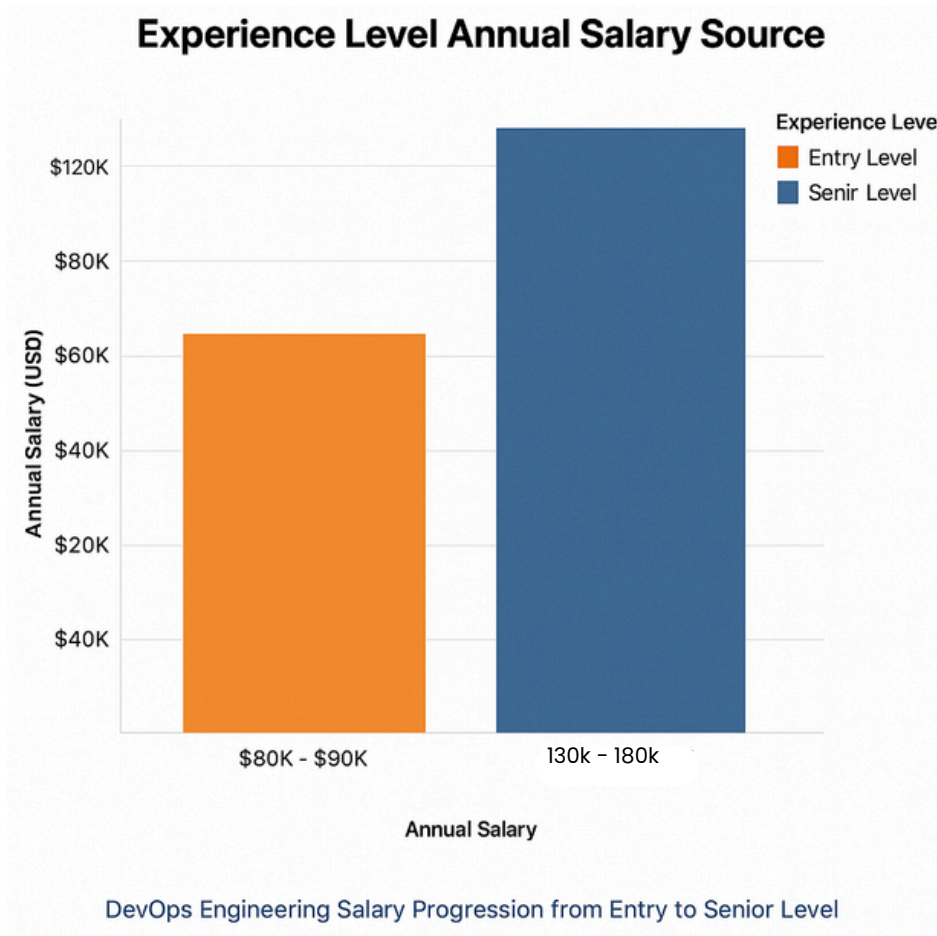
- Describe AWS Global Infrastructure and its Benefits
- Sign-up an AWS free-tier account
- Work with AWS Management Console and AWS CLI
- Work with IAM Service
- Understand Virtualization
- Work with EC2
- Analyze various EC2 box configurations available

Topics

- Amazon Web Services (AWS)
- Benefits of AWS
- AWS Global Infrastructure
- AWS: IAM
- Components of IAM
- Managing users with IAM
- Amazon Machine Image (AMI)

Key Statistics on DevOps Demand

- Salary Insights:** Payscale's 2025 Salary Report reveals that entry-level DevOps engineers earn an average starting salary of **\$85,000**, with experienced professionals earning upwards of **\$130,000** annually.
- Skill Demand:** A McKinsey survey found that automation, CI/CD pipelines, and infrastructure as code are among the top skills required for DevOps roles, with certifications from AWS or Kubernetes providing a competitive edge.
- Job Market Trends:** LinkedIn's Workforce Report from 2024 ranks DevOps engineering as one of the top three most in-demand tech roles globally.



PROGRAM HIGHLIGHTS

This 6-month program is uniquely designed by Sky States, Microsoft and industry leaders to help you learn exactly what the job market demands.



**Industry-recognized
certificate from Microsoft
and Sky States**



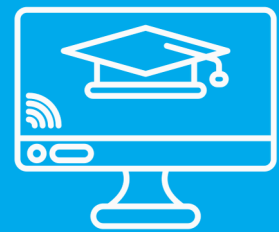
**100% Job Placement through
our in-house recruitment
agency with over 250 hiring
partners**



**Industry-relevant skills
For new age DevOps And
Cloud Computing**



**Hands-on program and
Industry-Grade Capstone
Projects**



**Designed by leading
academic and industry
experts along with
Microsoft**

OUR TOP RECRUITERS

accenture



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Tech Mahindra

Alphabet

amazon

Honeywell



Walmart

OUR ALUMNI WORK AT

Capgemini

Cognizant

Deloitte



Tech Mahindra

Alphabet

amazon

Honeywell



Humana



ACADIA
HEALTHCARE

accenture

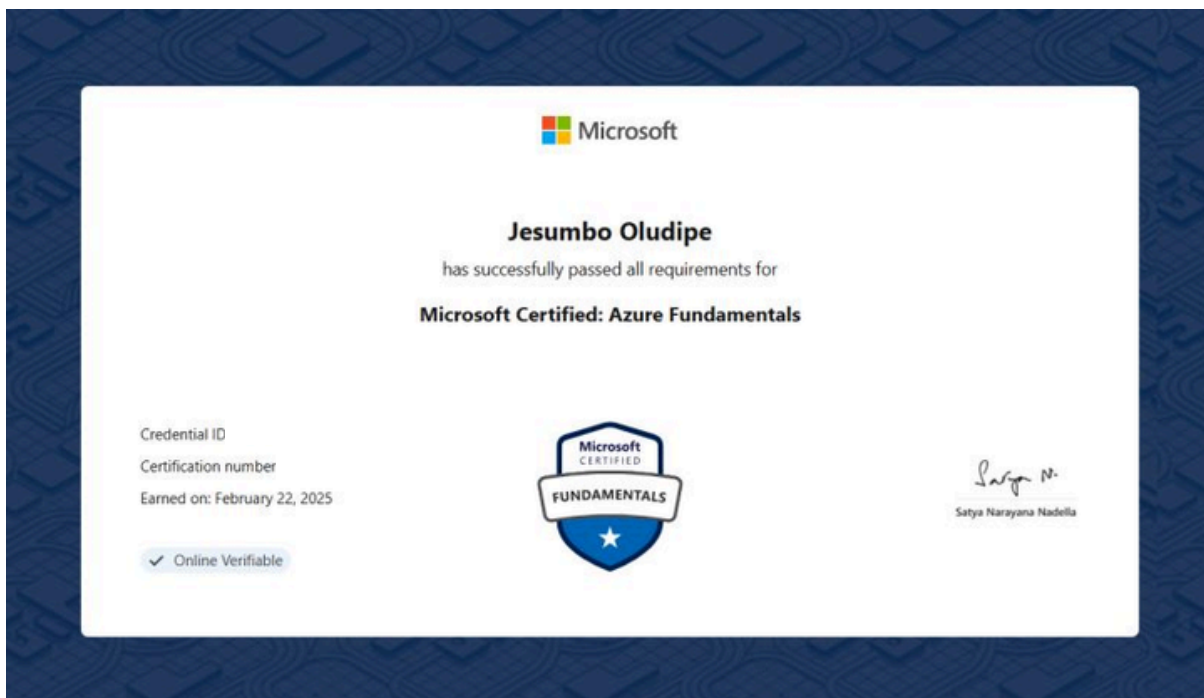


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Certificate

Upon successful completion of the DevOps & Cloud Computing Program, you will receive industry-recognized certifications from **Microsoft (AZ-900)** and **Sky States**. These certifications validate your knowledge and skills in DevOps and Cloud Computing, demonstrating your expertise and enhancing your professional credibility.





We are the world's best online bootcamp providing Data Science & AI and Cyber Security & Ethical Hacking. Our e-learning platform offers comprehensive Programs designed to empower individuals with the skills and expertise necessary to thrive in these cutting-edge fields. With expertly crafted content, interactive lessons, and hands-on projects, we ensure that you gain a deep understanding of data science and AI concepts. Whether you're a beginner or a seasoned professional, Sky States is committed to equipping you with the tools and knowledge needed to succeed in this ever-evolving, data-driven landscape. Explore our Programs today and embark on your journey to mastery in data science and artificial intelligence.

Sky States

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