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FLAGSHIP PROGRAMME · LIVE ONLINE

Become a Cloud, DevSecOps & AI Practitioner in Six Months

One structured learning pathway across AWS, Azure, CI/CD, infrastructure as code, Kubernetes, cloud security and AI-assisted operations—with six practical capstone projects and a verifiable skills portfolio.

6 months
LIVE PROGRAMME

5 course tracks
INTEGRATED

6 capstones
PRACTICAL PROJECTS

AWS · Azure · Terraform · Jenkins · GitHub Actions · Docker · Kubernetes · Cloud security · AIOps

Live online · Instructor-led

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Programme overview

One structured learning pathway across AWS, Azure, CI/CD, infrastructure as code, Kubernetes, cloud security and AI-assisted operations—with six practical capstone projects and a verifiable skills portfolio.

Who this is for

- Learners moving from IT fundamentals into cloud and DevSecOps
- Developers and administrators building broader cloud delivery skills

Before you start

- Basic computer skills and willingness to practise Linux, networking and scripting
- Share your background during enquiry to plan prerequisite preparation

The six-month roadmap

A proposed month-by-month plan; exact pacing and weekly hours are agreed for each batch.

MONTH	FOCUS	PRACTICAL OUTCOME
1	Linux, networking, Git/Python, AWS core	**Secure AWS environment**
2	AWS solution design and Azure fundamentals	**AWS architecture + Azure comparison**
3	Terraform, Ansible, CI/CD	**Reviewed delivery pipeline**
4	Docker, Kubernetes, Helm, GitOps and observability	**Container workload and dashboard**
5	Security, resilience and incident response	**Secure supply chain and response drill**
6	AIOps, AI agents, approval workflows, capstones	**AI-assisted operations + portfolio defence**

M1 — Month 1 — Linux, networking, Git/Python and AWS core

Practical outcome: Secure AWS environment

- Linux administration, networking, Git, shell and Python fundamentals
- AWS shared responsibility, identity, networking, compute and storage
- Budget alerts, tagging and resource cleanup habits

M2 — Month 2 — AWS solution design and Azure fundamentals

Practical outcome: AWS architecture + Azure comparison

- AWS resilient, secure, performant and cost-aware architecture; SAA-C03 scenarios
- Azure identity, networking, storage, compute, governance and administration foundations
- Start CP01: highly available three-tier application on AWS

M3 — Month 3 — Terraform, Ansible and CI/CD

Practical outcome: Reviewed delivery pipeline

- Terraform modules, state and reviewed infrastructure changes; Ansible configuration
- Jenkins/Maven and GitHub Actions in a shared CI/CD progression, with AWS delivery services and Azure DevOps
- Pull-request reviews, quality gates and approval workflows

M4 — Month 4 — Docker, Kubernetes, Helm, GitOps and observability

Practical outcome: Container workload and dashboard

- Docker, Compose, Kubernetes, ingress, storage and scaling
- Helm charts and GitOps delivery with Argo CD
- Prometheus, Grafana, ELK, monitoring concepts, SLIs/SLOs and tracing

M5 — Month 5 — Security, resilience and incident response

Practical outcome: Secure supply chain and response drill

- SAST, DAST, SCA, secret scanning, container/IaC scanning and supply-chain controls
- AWS identity boundaries, encryption, threat detection, governance and incident response
- Resilience testing, backup and recovery, containment with approval gates

M6 — Month 6 — AIOps, AI agents, approval workflows and capstones

Practical outcome: AI-assisted operations + portfolio defence

- AI-assisted code review, AIOps log summaries, anomaly detection and basic MLOps delivery
- AI agents with human approval, controlled remediation, audit trails, rollback and cost/privacy safeguards
- CP06 integrated capstone and portfolio defence
- Career preparation: GitHub portfolio, resume discussion, scenario interviews and troubleshooting practice

Five course tracks

Each track can also be taken as an independent course. In the integrated cohort they build on each other towards one platform.

AWS Solutions Architect Associate — SAA-C03

Design secure, resilient, efficient AWS solutions. Learn VPC, compute, storage, databases, serverless, monitoring, recovery and architectural decision-making.

CP01: Highly available three-tier application

DevSecOps — Automation, Delivery & Security

Build delivery workflows from Git and CI/CD through Terraform, Docker, Kubernetes, GitOps, observability and software supply-chain security.

CP02: End-to-end secure delivery platform

Azure Administration & Solution Architecture Foundations

Operate Azure identities, networks, compute, storage and governance while practising introductory solution architecture and repeatable deployments.

CP03: Secure Azure enterprise application

AWS Cloud Security & DevSecOps

Apply threat modeling, IAM guardrails, encryption, detection, supply-chain security and incident-response workflows to AWS environments.

CP04: Defense-in-depth and incident response

AI + DevOps — AIOps & MLOps Foundations

Use AI safely to review infrastructure code, summarize operational evidence, detect anomalies and support human-approved remediation.

CP05: AI-assisted operations and incident triage

Six capstone projects

Every track ends in a capstone with required submissions and a live demonstration. CP06 brings the earlier building blocks together on one application.

CP01 · AWS SOLUTIONS ARCHITECT

Highly available three-tier application

BUILD

- VPC split into public and private subnets
- ALB + Auto Scaling compute
- RDS Multi-AZ
- S3 and CloudFront
- Route 53
- IAM, KMS and Secrets Manager
- CloudWatch and cost controls

REQUIRED SUBMISSION

- Architecture diagram
- Deployable templates
- Live endpoint
- Availability test
- RTO/RPO assumptions
- Cost estimate
- Cleanup report

Demonstration: Web-tier instance failure followed by healthy service and restoration; explain the trade-offs.

CP02 · DEVSECOPS AUTOMATION & DELIVERY

End-to-end secure delivery platform

BUILD

- Git pull-request workflow
- Jenkins or GitHub Actions
- Maven and tests
- Terraform + Ansible
- Docker
- Kubernetes
- Helm
- Argo CD
- Prometheus and Grafana
- Security quality gates

REQUIRED SUBMISSION

- Git repository
- Workflow YAML / Jenkinsfile
- Infrastructure as code
- Charts and manifests
- Test evidence
- Dashboards
- Release and rollback runbook

Demonstration: Commit a change, pass the security gates, deploy through GitOps and roll back.

CP03 · AZURE ADMINISTRATION & ARCHITECTURE

Secure Azure enterprise application

BUILD

- VNet and private connectivity
- App Service or VMs
- Azure SQL
- Entra ID and managed identity
- Key Vault
- Azure Monitor
- Bicep or Terraform
- Governance controls

REQUIRED SUBMISSION

- Reference diagram
- IaC repository
- Identity map
- Dashboard
- Operational handbook
- Budget and backup plan

Demonstration: Deploy the app to staging, verify Key Vault access and show recovery monitoring.

CP04 · AWS CLOUD SECURITY & DEVSECOPS

Defense-in-depth and incident response

BUILD

- IAM boundaries
- KMS
- GuardDuty and Security Hub
- S3 controls
- WAF
- Pipeline image and IaC checks
- Kubernetes policies
- Containment runbooks

REQUIRED SUBMISSION

- Threat model
- Controls matrix
- Scan findings
- Fixed vulnerabilities
- Signed-off incident log
- Evidence bundle

Demonstration: Inject an intentional misconfiguration, detect it, block promotion and conduct an approved containment.

CP05 · AI + DEVOPS / AIOPS

AI-assisted operations and incident triage

BUILD

- Metrics, logs and traces
- Anomaly detection
- Log summarization
- Runbook retrieval
- Approval gate
- Sandbox remediation
- Token, cost and privacy safeguards

REQUIRED SUBMISSION

- Dashboard
- Source-grounded incident report
- Evaluation set
- Approval and audit trail
- Fallback runbook

Demonstration: Inject an incident; AI explains the evidence and suggests a fix; the operator approves a reversible action.

CP06 · INTEGRATED SIX-MONTH PROGRAMME

Secure, observable and AI-assisted cloud delivery platform

BUILD

- Reuse CP01–CP05 building blocks progressively on one application
- Primary hosting on AWS or Azure; optional comparison on the second cloud
- CI/CD, Kubernetes, security and AIOps

REQUIRED SUBMISSION

- Consolidated repository and diagrams
- Environment templates
- Test and security evidence
- Observability
- Approved AI operations demo
- Demo video
- Portfolio README

Demonstration: Pull request to a production-like release; a rejected unsafe build; failure injection; a diagnosed incident; a reviewed rollback and a documented postmortem.

Account requirements and lab credits are confirmed for each batch; follow the budget and cleanup instructions. AI remediation and security drills run only in isolated or expressly authorized sandbox environments, with human approval.

Detailed course syllabuses

The programme brings these course syllabuses together (83 modules, 724 topics). Each is also available as an independent course.

AWS Solutions Architect Associate — SAA-C03

21 modules · 183 topics · 29 practice items

Build a practical foundation in designing secure, resilient, high-performing and cost-aware AWS architectures, with SAA-C03 preparation and a three-tier application project.

Modules: AWS architecture and account setup · VPC networking and private connectivity · EC2 compute and purchasing choices · VPN connectivity · Storage and content delivery · Route 53 and traffic policies · IAM, identity and CLI access · Load balancing and Auto Scaling · AWS database service choices · Elastic Beanstalk application environments · Application integration and streaming · Serverless applications and API Gateway · AWS container services · Management and governance · Billing and cost management · Migration and data movement · Monitoring and auditing · Security, identity and compliance · CloudFormation and repeatable provisioning · AWS service landscape and architecture review · Architecture and design scenarios

DevSecOps — Automation, Delivery & Security

34 modules · 311 topics · 101 practice items

Connect development, operations and security through Git, CI/CD, infrastructure as code, containers, observability and practical security controls.

Modules: Cloud computing foundations · Networking foundations · Linux administration · DevOps tools learning goals · Git and GitHub workflows · Terraform and infrastructure as code · Docker images and application packaging · Docker ecosystem and networking · Kubernetes orchestration and practical deployments · Jenkins, Maven and continuous integration · Ansible configuration management · Nagios monitoring and alerts · Prometheus metrics and exporters · Grafana dashboards and observability · DevSecOps automation and runtime security · AWS delivery and SDLC automation · AWS configuration and infrastructure automation · AWS monitoring, logging and event automation · AWS policies, guardrails and security automation · AWS incident response and disaster recovery · AWS availability, fault tolerance and scaling · Continuous security and audit practice · Azure subscriptions and resource governance · Azure App Service and virtual machines · Azure DevOps setup and culture · Azure Boards and agile planning · Azure Repos and collaborative Git · Standardised environments and ARM templates · Azure build and release pipelines · Azure Artifacts and package feeds · Azure containers and AKS · Secure pipeline scanning and secrets practice · Programming and automation · Observability and SRE concepts

Azure Administration & Solution Architecture Foundations

14 modules · 101 topics · 37 practice items

Learn associate-level Azure administration foundations and apply them to introductory solution design across identity, networking, compute, storage and recovery.

Modules: Azure fundamentals and governance · Associate-level administration foundations · Automation and delivery · Solution design foundations · Azure architecture project · Azure subscriptions and resource governance · Azure App Service and virtual machines · Azure DevOps setup and culture · Azure Boards and agile planning · Azure Repos and collaborative Git · Standardised environments and ARM templates · Azure build and release pipelines · Azure Artifacts and package feeds · Azure containers and AKS

AWS Cloud Security & DevSecOps

11 modules · 116 topics · 26 practice items

Deepen AWS security skills through identity, detection, infrastructure protection, encryption, secure delivery, incident response and governance.

Modules: Cloud security and DevSecOps foundations · IAM and advanced access controls · Detection, logging and threat analysis · Infrastructure and network security · Data protection and encryption · Application and CI/CD security · Container and Kubernetes security · Incident response and automation · Governance, risk and compliance · Advanced security architecture · End-to-end DevSecOps security capstone

AI + DevOps — AIOps & MLOps Foundations

3 modules · 13 topics · 31 practice items

Apply AI assistance to infrastructure code, CI/CD and operations, then explore anomaly detection, log summarisation, model delivery and controlled remediation.

Modules: AI in DevOps · AIOps and MLOps foundations · AI-powered monitoring and controlled remediation

Detailed syllabus — AWS Solutions Architect Associate — SAA-C03

01 AWS architecture and account setup

4 topics

LEARNING OBJECTIVES

- Understand the AWS Well-Architected Framework and core architectural principles.
- Design highly available, fault-tolerant, and scalable cloud infrastructure using AWS services.
- Select the appropriate compute, storage, networking, and database services for given use cases.
- Design secure applications using IAM, KMS, Security Groups, and VPC components.
- Implement cost-optimized architectures using tools like AWS Pricing Calculator and Trusted Advisor.
- Understand and design multi-tier, decoupled, and event-driven architectures using services like S3, Lambda, SNS, and SQS.
- Use Auto Scaling, ELB, and CloudFront to improve application performance and availability.
- Leverage CloudFormation and AWS CLI for infrastructure automation and repeatability.
- Practice building and evaluating solutions that meet compliance, resilience, and operational excellence requirements.
- Prepare for real-world scenarios with exam-aligned hands-on labs and mock assessments.

TOPICS

- Introduction to AWS
- AWS Architecture
- AWS Management Console
- Setting up of the AWS Account

02 VPC networking and private connectivity

13 topics · 6 practice items

TOPICS

- VPC (Virtual Private Cloud)
- Understanding & Configuring VPC
- Configuring Subnet & extracting networks's out of VPC
- Configuring Route Table
- Understanding & Configuring Internet Gateway for VPC
- Egress only Internet Gateway
- NAT Gateway/NAT Instance Configuration
- DHCP option set
- Elastic IP
- Network access list
- VPC Peering
- Endpoint
- Egress Only Internet Gateways

HANDS-ON PRACTICE

- Creating VPC
- Create an 2nd Route Table for 2nd Subnet
- Creating NAT GW with EC2 instances in public and private subnets
- Login to EC2 Private VM02 from Public VM01
- Creating Network with instance only in the IPV6 env.
- Creating a setup to communicate with 2 different VPC over a Region.

03 EC2 compute and purchasing choices

7 topics · 2 practice items

TOPICS

- EC2 Cloud Compute services
- Launching the Instance AMI
- Configuring Security Groups
- Understanding Security Key pair

- Configuring network Interfaces
- Understanding and Configuring dedicated Host
- Understanding Different Instance types

HANDS-ON PRACTICE

- Create EC2 instance and login via tools like Xshell and Putty
- Practice for recommending customers for On-Demand or Reserved Instance

04 VPN connectivity

3 topics · 1 practice items

TOPICS

- VPN Connections
- Customer Gateway
- VPG Gateways & VPN Connections

HANDS-ON PRACTICE

- Create an VPN setup from one Region of AWS to Another Region VPC over the internet

05 Storage and content delivery

8 topics · 4 practice items

TOPICS

- Storage & Content Delivery
- S3 Bucket Configuration & Implementation
- Static Web Hosting via S3 Bucket
- S3 bucket policy
- EBS
- Cloud front Configuration
- Understanding & Implementing Glacier Versioning S3
- Understanding Functionality Snow ball Migrations

HANDS-ON PRACTICE

- Create an S3 bucket with versioning and upload the file twice
- Make an S3 bucket as Static web Hosting location
- Configure an S3 replication to another AWS Account
- Configure S3 to push the objects to Glacier and then Expire it.

06 Route 53 and traffic policies

5 topics · 2 practice items

TOPICS

- Route 53
- Traffic Management
- DNS Management
- Traffic Policy & Endpoint
- Domain Name Registration

HANDS-ON PRACTICE

- Create an Domain (if Possible)
- Create an Traffic policy with “Geolocation” – Latency – Failover

07 IAM, identity and CLI access

5 topics · 4 practice items

TOPICS

- Security Identify & Compliances
- Identify & Access Management

- Policy creation
- Roles creation
- CLI access

HANDS-ON PRACTICE

- Create an IAM user access for console and CLI access
- Create IAM policy for 4 to 5 Scenarios
- Create Roles for accessing S3 from EC2.
- Create json files to create EC2, VPC and other aws services via CLI access

08 Load balancing and Auto Scaling

7 topics · 3 practice items

TOPICS

- Auto Scaling & ELB
- Understanding Load balancing
- Types of AWS elastic load balancer
- How Elastic Load balancer works
- Difference Between internal and external load balancer
- Implementing elastic load balancer Configuring Auto Scaling & Creating CloudWatch for Optimization
- Creating Load Balancing with application & Classic Load Balancers

HANDS-ON PRACTICE

- Create Loadbalancer with 2 EC2 instance behind it for hosting an website.
- Create Autoscaling Group for hosting an application
- A Lab with LoadBalancer with Autoscaling for a scalable website Hosting.

09 AWS database service choices

13 topics · 2 practice items

TOPICS

- Databases Services
- Understanding the different Databases offered by AWS
- Amazon Aurora
- Amazon Aurora Serverless
- Amazon DocumentDB (with MongoDB compatibility)
- Amazon DynamoDB
- Amazon ElastiCache
- Amazon Keyspaces (for Apache Cassandra)
- Amazon Neptune
- Amazon QLDB (availability confirmed before practice)
- Amazon RDS
- Amazon Redshift
- Amazon Timestream

HANDS-ON PRACTICE

- A LAB on MYSQL DB
- A LAB on Dynamo DB configured with an website form

10 Elastic Beanstalk application environments

5 topics · 2 practice items

TOPICS

- Elastic Beanstalk
- Concepts
- Configuration
- Implement Env with sample code
- Use Case

HANDS-ON PRACTICE

- Implement Env with sample code and upgrade the same
- Implement 2 Env, one for Dev, another for Prod and swap the links

11 Application integration and streaming

9 topics

TOPICS

- Implementing Application Services
- Understanding and Implementing SNS
- Understanding and Implementing SQS
- Understanding Kinesis - Stream, FireHose & Analytics
- Amazon AppFlow
- AWS AppSync
- Amazon MQ
- AWS Step FunctionsAWS
- Media Services - Amazon Elastic Transcoder (availability confirmed before practice)

12 Serverless applications and API Gateway

5 topics

TOPICS

- Serverless Computing & API Gateway
- Understanding and implementing Lambda function with a use case
- Understanding and implementing an API Gateway
- Understanding and implementing a Serverless Dynamo DB Table
- Integrate the above

13 AWS container services

6 topics

TOPICS

- Container Services
- Understanding Elastic Container Service (ECS), Amazon ECS Anywhere
- Understanding Elastic Kubernetes Service (EKS)
- Amazon Elastic Container Registry (Amazon ECR)
- Amazon EKS Anywhere
- Amazon EKS Distro

14 Management and governance

10 topics

TOPICS

- Management and Governance
- AWS Command Line Interface (AWS CLI)
- AWS Compute Optimizer
- AWS Config
- AWS Control Tower
- Amazon Managed Grafana
- Amazon Managed Service for Prometheus
- AWS Systems Manager
- AWS Trusted Advisor
- AWS Well-Architected Tool

15 Billing and cost management

5 topics

TOPICS

- AWS Billing and Cost Management
- AWS Budgets
- Cost Explorer
- AWS Cost and Usage Report

- Saving Plans

16 Migration and data movement

10 topics

TOPICS

- Migration
- AWS Budgets
- Describe AWS Database Migration Service (AWS DMS)
- Describe AWS DataSync
- Describe AWS Migration Hub
- Describe AWS Server Migration Service (availability confirmed before practice)
- AWS Application Discovery Service
- AWS Application Migration Service (CloudEndure Migration)
- AWS Migration Hub
- AWS Snow Family

17 Monitoring and auditing

5 topics

TOPICS

- Monitoring & Auditing AWS
- Introduction to CloudWatch
- Configuring CloudWatch
- Monitoring services using CloudWatch
- Describing CloudTrail

18 Security, identity and compliance

19 topics

TOPICS

- Describe Security, Identity and Compliance
- AWS Certificate Manager (ACM)
- AWS Directory Service
- Amazon GuardDuty
- Amazon Inspector
- AWS Key Management Service (AWS KMS)
- AWS Secrets Manager
- AWS Shield
- AWS Single Sign-On
- AWS WAF
- AWS Artifact
- AWS Audit Manager
- AWS CloudHSM
- Amazon Cognito
- Amazon Detective
- AWS Firewall Manager
- AWS Network Firewall
- AWS Resource Access Manager (AWS RAM)
- AWS Security Hub

19 CloudFormation and repeatable provisioning

13 topics · 3 practice items

TOPICS

- Cloud Formation
- Management Tools
- Basic Concepts of CloudFormation
- Practice Assignment: Cloud Formation
- Deployment and Provisioning
- CloudFormation: Terminology
- CloudFormation: Structure of the template
- CloudFormation: Working with Stacks
- CloudFormation: Ref functions
- CloudFormation: Parameters
- CloudFormation: Init and User Data
- CloudFormation: Creating Base templates
- CloudFormation: Troubleshooting templates

HANDS-ON PRACTICE

- Deploying a Multi-tier website using VM, Autoscaling & Load Balancing with High Availability on Cloud
- Using Portal / AWS CLI / CloudFormation Template / Terraform
- DATA migration from onsite DC NFS server to Storage Account with continuous synch

20 AWS service landscape and architecture review

26 topics

Service coverage and exercise scope are confirmed for each batch.

TOPICS

- Intro to AWS, & VPC
- EC2-instance. Elastic IP
- EC2-Usage-Types
- Pri & Public Subnet, NAT GW
- SG & NACL
- VPC-Peering, VPN & Direct Connect
- CloudFormation-Template
- IAM-policy, roles
- IAM-Cli
- Volumes, Snapshot
- S3, website, Log, version
- S3, rep, lifecycle, KMS
- EFS, FSx, EFS Synch, Storage GW
- Backup
- CloudWatch, Events, Alarms
- CloudTrail, Event Bridge
- Elastic LoadBalancer
- Autoscaling
- Route53, DHCP
- RDS, Aurora, MySQL
- SQS, SES, Lambda, EMR
- Billing and Cost Mgmt
- Migration, AWS DMS, DataSync, Migration Hub
- Migration, Discovery-Service, Snow Family
- Serverless & API GW, Container Service
- Mgmt and Governance, Security, Identity

21 Architecture and design scenarios

5 topics

TOPICS

- Three-tier cloud architecture
- Microservices design and decoupled application patterns
- High-availability systems and recovery trade-offs
- Multi-region architecture
- Cost optimisation and FinOps review

Detailed syllabus — DevSecOps — Automation, Delivery & Security

01 Cloud computing foundations

9 topics

LEARNING OBJECTIVES

- Understand the basic concepts and characteristics of cloud computing.
- Identify the different cloud service models (IaaS, PaaS, SaaS).
- Explain the benefits and challenges of cloud adoption.
- Gain an overview of public, private, and hybrid cloud models.

TOPICS

- What is cloud computing?
- History of cloud
- Different vendors for Cloud
- Cloud main objectives
- IaaS overview
- PaaS overview
- SaaS overview
- Why AWS Cloud
- Features of AWS cloud

02 Networking foundations

7 topics

LEARNING OBJECTIVES

- Grasp fundamental networking concepts, including IP addressing, subnets, and routing.
- Understand the function of network components such as routers, switches, and firewalls.
- Learn basic network configurations and how they support cloud infrastructures.
- Comprehend essential networking protocols and their roles in data transfer.

TOPICS

- What is Networking
- IP address Basic
- Classes of IP
- Subnetting
- Public / Private IP
- Natting/ Patting
- IP V6 Implementation

03 Linux administration

7 topics

LEARNING OBJECTIVES

- Develop foundational skills in Linux command-line interface (CLI) navigation.
- Perform essential administrative tasks such as file management, user permissions, and process control.
- Understand how to install and manage software packages on a Linux system.
- Configure basic network settings and manage services on Linux servers.

TOPICS

- Introduction to UNIX & LINUX
- Installation of Linux
- Access the command line
- Manage files from the command line
- Advanced File Permissions
- Disk Partitioning and Mounting File System
- DevOps Tools (50hrs)

04 DevOps tools learning goals

5 topics

LEARNING OBJECTIVES

- End-to-End Pipeline Automation
- Cross-Platform Expertise
- Scalability and Efficiency
- Team Collaboration and Best Practices
- Monitoring and Feedback

TOPICS

- End-to-end pipeline automation
- Cross-platform delivery practices
- Scalability and efficiency
- Team collaboration and code review
- Monitoring and feedback

05 Git and GitHub workflows

12 topics · 7 practice items

LEARNING OBJECTIVES

- Upon completing this module, you should be able to install GIT and work with remote repositories and perform management of files for small as well as large projects, execute branching and merging operation and will learn about various GIT commands in Git cheat sheet.

TOPICS

- What is version control?
- What is Git?
- Why Git for your organization?
- Installing Git
- Working with Remote Repositories (GITHUB)
- Branching and Merging in Git
- Git-Merge-Conflicts-Rebase
- Rebase-Gitignore-stash
- Git stash & reset & revert
- Git workflows, Handling Detached head and undo
- Git tag, Recap, Best practice
- Git cherry pick and Git hooks

HANDS-ON PRACTICE

- GIT Installation, Version Control, branching and merging of code.
- Pulling and Pushing repositories from remote server (GITHUB)
- GITHUB – Branching and merging
- How to save the data in work dir for temp time and retrieve it
- Manage user access with approve work flow on the github during the push and pull request
- Git Hook Use Case: Enforcing Code Style Before Commit
- Git Cherry-Pick Use Case: Hotfix Across Multiple Branches

06 Terraform and infrastructure as code

18 topics · 1 practice items

TOPICS

- IaC
- Understand infrastructure as code (IaC) concepts
- Understand Terraform's purpose (vs other IaC)
- Terraform basics
- Use the Terraform CLI
- when to use terraform fmt to format code
- when to use terraform taint to taint Terraform resources
- when to use terraform import to import existing infrastructure into your Terraform state
- Terraform workflow
- Variables – input, output and locals
- Implement and maintain state

- Provisioners, 3 types with example
- Backend, state files, Terraform cloud
- Terraform Registry
- Best Practices
- Advance Topics
- Terraform for multi-cloud deployments.
- Debugging and troubleshooting Terraform.

HANDS-ON PRACTICE

- Project: deploying a web application, setting up a CI/CD pipeline, or managing infrastructure across multiple environments

07 Docker images and application packaging

11 topics · 11 practice items

TOPICS

- Shipping Transportation Challenges
- Introducing Docker
- Understanding images and containers
- Running Hello World in Docker
- Introduction to Container
- Container Life Cycle
- Sharing and Copying
- Base Image
- Docker File
- Working with containers
- Publishing Image on Docker Hub

HANDS-ON PRACTICE

- Create and Implement docker images and containers
- Publish image on the docker hub
- Dockerfile implementation
- WAR file in tomcat Container
- Pipeline exercise: Jenkins- Docker - Pipeline
- Pipeline exercise: Jenkins- DockerCompose – Pipeline
- Create Shell script to
- Git clone the java code.
- Build the package for java code using maven
- Build docker image with copying the *.WAR file to the image.
- Create container for the above image with port mapping.

08 Docker ecosystem and networking

9 topics · 5 practice items

TOPICS

- Ecosystem and Networking
- Introduction to Docker Ecosystem
- Docker Compose
- Docker Swarm
- Managing Containers
- Running Containers
- Introduction to Docker Networking
- Network Types
- Docker Container Networking

HANDS-ON PRACTICE

- Use Docker Compose to create a WordPress site
- Start Containers on a Cluster with Docker Swarm
- Manage Containers locally using Kitematic UI (tooling confirmed before practice), Managing Container through Docker UI
- Docker Compose -- Python Script + REDIS
- Docker Swarm setup using terraform code and deploying docker-compose in the cluster

09 Kubernetes orchestration and practical deployments

13 topics · 17 practice items

TOPICS

- Introduction to Kubernetes and Minikube(Tool)
- Installing Kubernetes
- Container Orchestration / Container Management using Kubernetes
- Managing Workloads in Kubernetes (ReplicaSets and Deployments)
- Overview of Services
- Volume Management, Storage Classes
- Auto-scaling
- Load-Balancing using Ingress
- Deploying and scaling an application using Minikube locally
- Configuration maps
- Secrets mgmt.
- StatefulSets
- Setup Kubernetes Cluster – 3 node

HANDS-ON PRACTICE

- Set up Minikube
- Install Kubernetes using kubeadm or Minikube
- Deploy a simple application Nginx
- Scaling and deployment of Docker Application using Kubernetes
- Expose an application using Kubernetes services
- Persistent storage using Kubernetes Volumes
- Ingress controller setup and usage
- Full application deployment (Python + Redis + Nginx)
- Stateful application deployment with StatefulSets
- Using terraform setup the Kubernetes Cluster – 3 node.
- Deploy a full application stack using Minikube that includes
- A web front-end
- A back-end API
- A database service (MongoDB) using StatefulSets.
- Use ConfigMaps and Secrets for configuration management.
- Expose services using Ingress with load balancing.
- Implement auto-scaling and persistent storage for the database.

10 Jenkins, Maven and continuous integration

14 topics · 5 practice items

LEARNING OBJECTIVES

- Upon completing this module, you should be able to understand the importance of Continuous Integration, learn about Jenkins and Maven by building and deploying codes using Jenkins and Maven, also perform automation tests and build Delivery Pipelines.

TOPICS

- What is CI
- Why CI is Required
- Introduction to Jenkins (With Architecture)
- Introduction to Maven
- Jenkins Management
- Global Configuration
- Plugins
- Roles Based Authentication
- Build Setup
- Test Automation (with Maven)
- Securing Jenkins
- Notification System
- Building Delivery Pipeline
- Controller and agent concepts

HANDS-ON PRACTICE

- Build the controller and agent nodes and run jobs on the agents
- Build and automation of Test using Jenkins and Maven and deploy in the container
- Build the complete pipeline by invoking top level Maven project
- Jenkins with GITHUB integration as a pipeline script
- Configure Jenkins with basic configuration and roles and responsibility for the users.

11 Ansible configuration management

7 topics · 4 practice items

LEARNING OBJECTIVES

- Upon completing this module, you should be able to install Ansible on your machine, write Ansible Playbooks, execute ad-hoc commands using Ansible and differentiate Ansible and Puppet.

TOPICS

- Introduction to Ansible
- Ansible Installation
- Configuring Ansible Roles
- Write Playbooks
- Executing adhoc command
- Implementing Ansible
- Implement Ansible Tower

HANDS-ON PRACTICE

- Installing Ansible
- Configuring Ansible Role
- Write Playbooks
- Execute Ad-Hoc commands

12 Nagios monitoring and alerts

15 topics · 6 practice items

TOPICS

- Introduction to Continuous Monitoring
- Introduction to Nagios
- Installing Nagios
- Understanding Nagios Configuration Files
- nagios.cfg: The main configuration file.
- objects/hosts.cfg: Configuration for hosts.
- services.cfg: Configuration for services.
- contacts.cfg: Notification settings.
- Nagios Plugins(NRPE) and Objects
- Nagios Commands and Notification
- How to customize plugins
- Setup advanced notifications and escalations
- Setup SNMP monitoring
- View Performance data visualization
- Configure and manage distributed monitoring

HANDS-ON PRACTICE

- Install and configure Nagios Core on a Linux server(with web interface)
- Lab: Add a Linux host and basic service monitoring (e.g., ping, HTTP, disk space).
- Set up email notifications for alerts.
- Set up and configure NRPE to monitor remote Linux/Windows hosts.
- Set up advanced notification rules and escalation policies.
- Integrate Nagios with tools like Grafana, or Slack.

13 Prometheus metrics and exporters

5 topics · 2 practice items

TOPICS

- Introduction to Prometheus
- Prometheus Architecture
- Monitoring with Prometheus
- Scraping Metrics with Prometheus

- Prometheus YAML Configs and Node Exporter

HANDS-ON PRACTICE

- Learn how to set up Prometheus for monitoring applications and infrastructure.
- Understand Prometheus configuration files and set up Node Exporter for system monitoring.

14 Grafana dashboards and observability

5 topics · 3 practice items

TOPICS

- Introduction to Visualization with Grafana
- Installing Grafana on a Linux Server
- Grafana User Interface Overview
- Creating Grafana Dashboards
- Grafana with Docker

HANDS-ON PRACTICE

- Set up Grafana on a Linux server to start visualizing metrics.
- Learn how to set up Prometheus for monitoring applications and infrastructure.
- Deploy Grafana using Docker for a containerized setup.

15 DevSecOps automation and runtime security

10 topics

LEARNING OBJECTIVES

- End-to-End Pipeline Automation: SonarQube, Checkmarx, or Snyk. Scalability and Efficiency: Cloud Custodian or Open Policy Agent (OPA) to enforce security policies in cloud environments. Monitoring and Feedback: Integrate Prometheus and Grafana for real-time monitoring along with ELK Stack or Splunk for secure log management.

TOPICS

- End-to-End Pipeline Automation
- Integrate security scans at every stage of the CI/CD pipeline using tools like SonarQube, Checkmarx, or Snyk.
- Automate container image scanning using Trivy or Aqua Security.
- Cross-Platform Expertise
- Ensure consistent security practices across platforms with HashiCorp Vault for secret management and Anchore for container security.
- Scalability and Efficiency
- Use Cloud Custodian or Open Policy Agent (OPA) to enforce security policies in cloud environments.
- Monitoring and Feedback
- Integrate Prometheus and Grafana for real-time monitoring along with ELK Stack or Splunk for secure log management.
- Use tools like Falco or Sysdig for runtime security monitoring.

16 AWS delivery and SDLC automation

10 topics

LEARNING OBJECTIVES

- Understand the concepts and principles of DevOps and how they align with cloud development.
- Learn how to set up and configure AWS DevOps projects.
- Manage version control using Git and GitHub integrated with AWS DevOps.
- Build and deploy CI/CD pipelines using AWS Pipelines.
- Implement infrastructure as code (IaC) with tools like Terraform and cloudformation templates.
- Monitor and maintain CI/CD processes to ensure efficient and secure software delivery.

TOPICS

- Automate Code Pipelines
- Implementing CI/CD with AWS CodePipeline, CodeCommit, CodeBuild, and CodeDeploy
- Automating testing phases with CodeBuild and AWS CodeArtifact
- Integrating third-party tools like Jenkins, GitHub Actions, or GitLab
- Blue/Green and Canary Deployments
- Manage Build and Deployment Systems
- Containerized application deployment with ECS, EKS, and Fargate
- Automating serverless deployments with AWS SAM and AWS Lambda
- Managing application packages with CodeArtifact and Elastic Beanstalk
- Automated rollback strategies in CI/CD pipelines

17 AWS configuration and infrastructure automation

11 topics

TOPICS

- Infrastructure as Code (IaC)
- Using AWS CloudFormation: Nested Stacks, Drift Detection, and StackSets
- Terraform: Writing HCL, state management, and provisioning AWS resources
- AWS CDK (Cloud Development Kit) for IaC with programming languages
- Configuration Management
- Automating infrastructure configuration with AWS Systems Manager
- Using Ansible, Chef, or Puppet with AWS for configuration management
- Parameter Store and Secrets Manager for secure configuration
- Hybrid and Multi-Region Deployments
- Managing multi-region workloads using CloudFormation or Terraform
- Using AWS OpsWorks (availability confirmed before practice) for configuration management in hybrid environments

18 AWS monitoring, logging and event automation

11 topics

TOPICS

- Centralized Monitoring and Alerts
- Implementing monitoring with Amazon CloudWatch (Metrics, Alarms, Logs, and Dashboards)
- Setting up CloudWatch Agent on EC2 instances for custom metrics
- Using AWS X-Ray for distributed tracing
- Centralized Logging
- Aggregating logs with AWS CloudTrail and Amazon S3
- Implementing centralized log analysis with Amazon OpenSearch (formerly Elasticsearch)
- Integrating third-party monitoring tools like Prometheus, Grafana, or Splunk
- Event-Driven Automation
- Automating responses with AWS Lambda and EventBridge
- Configuring proactive alerts using SNS and CloudWatch

19 AWS policies, guardrails and security automation

8 topics

TOPICS

- Governance and Security
- Implementing AWS Organizations for account management
- Enforcing guardrails using AWS Config and Service Control Policies (SCPs)
- Setting up and managing compliance audits with AWS Audit Manager
- Security Best Practices
- Securing pipelines with IAM roles, policies, and encryption

- Automating security checks using AWS Inspector and AWS Security Hub
- Scanning containers with Amazon ECR and third-party tools

20 AWS incident response and disaster recovery

8 topics

TOPICS

- Disaster Recovery and Fault Tolerance
- Implementing RTO/RPO strategies with AWS Backup and S3
- Designing for high availability and disaster recovery using Route 53 and Global Accelerator
- Automated incident resolution with AWS Systems Manager (Runbooks)
- Proactive Issue Mitigation
- Automating remediation using AWS Lambda
- Setting up EventBridge to manage operational events
- Auto-healing infrastructure with Auto Scaling and ECS

21 AWS availability, fault tolerance and scaling

8 topics

TOPICS

- High-Availability Architectures
- Designing fault-tolerant architectures with Elastic Load Balancing and Auto Scaling
- Multi-region and multi-AZ architectures for resiliency
- Serverless design patterns with Lambda and Step Functions
- Scalability Techniques
- Optimizing performance with AWS Global Accelerator and CloudFront
- Implementing scaling policies in Auto Scaling groups
- Scaling containerized workloads with Kubernetes (EKS) and ECS

22 Continuous security and audit practice

8 topics

TOPICS

- Security in CI/CD
- Automating security testing using AWS CodePipeline integrations
- Performing static and dynamic code analysis with third-party tools
- Integrating security into IaC workflows (e.g., Terraform, CloudFormation)
- Audit and Compliance Management
- Using AWS Config for compliance auditing
- Setting up automated compliance scans with AWS Trusted Advisor
- Understanding AWS Well-Architected Framework for operational excellence

23 Azure subscriptions and resource governance

6 topics · 8 practice items

TOPICS

- Introduction to Microsoft Azure
- Overview of Course
- Overview of Microsoft Azure
- Cloud Computing Models: IaaS, PaaS, SaaS
- Types of Microsoft Azure Subscriptions
- Manage Azure Resource Groups – Tags, Locks, RBAC, Policies

HANDS-ON PRACTICE

- Microsoft Azure Account Sign Up
- Walkthrough of Microsoft Azure Services
- Create, Move, Delete Resource Group
- Create Tags
- Configure Locks: Read-only & CanNotDelete
- Create Custom Roles using RBAC
- Assign Users to access Resource
- Create & Deploy Policies

24 Azure App Service and virtual machines

7 topics · 4 practice items

TOPICS

- Working with Web App & Virtual Machines
- Overview of Azure App Service Web App
- Overview of App Service Plans
- Web App Deployment Methods
- Understanding Deployment Slots
- Overview of Virtual Machine
- Virtual Machine Resources

HANDS-ON PRACTICE

- Create & Deploy Web App – Files Explorer, FTP, Github, Visual Studio
- Create & Deploy Staging Environment for Web App
- Create & Deploy Virtual Machine using Portal – Windows
- Create & Deploy Virtual Machine using PowerShell & CLI - Windows

25 Azure DevOps setup and culture

9 topics

LEARNING OBJECTIVES

- Understand the concepts and principles of DevOps and how they align with cloud development.
- Learn how to set up and configure Azure DevOps organizations and projects.
- Manage version control using Git and GitHub integrated with Azure DevOps.
- Build and deploy CI/CD pipelines using Azure Pipelines.
- Implement infrastructure as code (IaC) with tools like Terraform and ARM templates.
- Configure Azure Boards for project planning and task tracking.
- Monitor and maintain CI/CD processes to ensure efficient and secure software delivery.

TOPICS

- Introduction to Azure DevOps
- What is DevOps?
- Why Culture is Important to DevOps
- Why Automation is Important to DevOps
- Azure DevOps Platform
- DEVOPS tools Required
- Setup Visual studio code
- Setup Extensions on Visual Studio Code
- Setup Azure DevOps account

26 Azure Boards and agile planning

7 topics

TOPICS

- Azure Boards
- What is boards
- What is Agile and Scrum?
- Creating Teams, Epics and Features
- What are product Backlogs and Task Boards
- How to create queries, Charts and Dashboards
- Creating Custom process and work items

27 Azure Repos and collaborative Git

12 topics · 5 practice items

TOPICS

- Azure Repo
- What is version control?
- What is Git?
- Why Git for your organization?
- Installing Git
- Working with Remote Repositories
- Branching and Merging in Git
- Git workflows
- Git cheat sheet
- What is Azure Repo
- Understanding REST API's
- Working with Webhooks in Azure Repos

HANDS-ON PRACTICE

- GIT Installation, Version Control, branching and merging of code.
- Pulling and Pushing repositories from Azure Repo server
- Ignoring certain files
- Difference between Merge and Rebase.
- Creating Development Environments and performing pull requests and approval.

28 Standardised environments and ARM templates

8 topics · 6 practice items

TOPICS

- Deploy and Configure Standardized Environments
- Overview
- Environments in IaaS/PaaS and with Containers
- Introduction to ARM Templates
- Implementing ARM Templates
- Logging, Troubleshooting and Diagnostics
- Provisioning and Configuring Environments with Azure DevTest Labs
- Introduction to Desired State Configuration

HANDS-ON PRACTICE

- Creating & Deploy ARM Template – Visual Studio Code
- Creating & Deploy ARM Template – Portal
- ARM Template Gallery
- Manage Templates
- ARM Template with PowerShell
- Lab Guide – Authoring ARM Template using Visual Studio

29 Azure build and release pipelines

17 topics · 7 practice items

TOPICS

- Build and Deploy Automatically to Production
- Overview of Build and Deploy
- Automated Builds
- Automated Deployments
- Package Management and Containers
- Overview of Continuous Integration
- Continuous Integration
- Pipelines and Agents
- Continuous Delivery
- Release Pipelines
- Environments and Tasks
- Advanced Delivery
- Overview of Continuous Deployment
- Continuous Deployment
- Advanced Continuous Deployment
- Testing overview and its connection to build/release validation
- ELK log analysis for deployed environments

HANDS-ON PRACTICE

- Create a Build
- Automated the Deployments
- Create a first Pipeline
- Working with Visual Designer

- Deploy Continuously - Local Git, Template
- Working with staging Environment
- Scaling Apps

30 Azure Artifacts and package feeds

6 topics

TOPICS

- Azure Artifacts
- Understanding Build and Pipeline Artifacts
- Creating and using a Feed from Azure Artifacts
- Upstream Sources
- Working with views in Feed
- Creating a Package using pipeline

31 Azure containers and AKS

14 topics · 7 practice items

TOPICS

- Azure Container Services
- ACS with managed Kubernetes (compare with the AKS topics below)
- AKS Features
- Azure Container Eco System
- Azure Container Registry
- Azure Kubernetes Services (AKS)
- Azure Container Instances (ACI)
- ACI Connector for Kubernetes
- ACI - Virtual Kubelet
- Open Service Broker for Azure (tooling confirmed before practice)
- Release Automation Tools
- Deploying Azure Kubernetes using Helm; Draft example (tooling confirmed before practice)
- Event-based Scripting using Brigade (tooling confirmed before practice)
- Create Dashboard and Visualization using Kashti (tooling confirmed before practice)

HANDS-ON PRACTICE

- Define your first Kubernetes pod
- Define your first replication controllers pod
- Working with Kubernetes replication controllers
- Working with Kubernetes Services
- Define & Working with Deployments
- Define & Working with Autoscaling
- Running Apache/Nginx Container in Kubernetes

32 Secure pipeline scanning and secrets practice

6 topics · 3 practice items

TOPICS

- SAST with SonarQube or Snyk; commercial alternatives discussed where relevant
- Container image scanning with Trivy; SBOM and supply-chain review
- Terraform/IaC scanning with Checkov and tfsec
- Secret scanning with Gitleaks and secrets management with HashiCorp Vault
- DAST and runtime validation with OWASP ZAP
- ELK logging, Prometheus/Grafana feedback, OPA policy checks and Falco runtime signals

HANDS-ON PRACTICE

- Build a CI/CD pipeline that rejects unsafe changes and records scan results
- Deploy a multi-tier website with VMs, Auto Scaling and load balancing using portal, CLI, CloudFormation or Terraform
- Plan continuous data synchronisation from an on-premises NFS server to cloud storage

33 Programming and automation

4 topics

TOPICS

- Python for DevOps
- AWS automation with boto3
- API calls and automation scripts
- Shell scripting

34 Observability and SRE concepts

4 topics

TOPICS

- Prometheus and Grafana metrics and dashboards
- ELK stack, logging and monitoring
- SLI, SLO and SLA concepts
- Introduction to distributed tracing

Detailed syllabus — Azure Administration & Solution Architecture Foundations

01 Azure fundamentals and governance

3 topics

TOPICS

- Cloud service models and AZ-900 foundation concepts
- Subscriptions, resource groups, Azure Policy, tags and cost budgets
- Microsoft Entra ID, RBAC and identity boundaries

02 Associate-level administration foundations

3 topics

TOPICS

- Virtual networks, subnets, NSGs, private endpoints and name resolution
- Virtual machines, availability choices, storage accounts and access control
- Azure Monitor, alerts, backup and recovery concepts

03 Automation and delivery

3 topics

TOPICS

- Azure CLI and PowerShell foundations
- ARM templates and Terraform resource provisioning
- Azure DevOps Boards, Repos, Pipelines and Artifacts; AKS overview

04 Solution design foundations

3 topics

TOPICS

- Translate workload requirements into compute, data and networking choices
- Compare identity, governance, monitoring and business-continuity designs
- Introductory AZ-305 design concepts; advanced expert preparation is outside this foundation course

05 Azure architecture project

3 topics

TOPICS

- Plan and deploy a small web workload with network boundaries and monitoring
- Document resource choices, recovery objectives, costs and cleanup
- Review operational tasks and scenario-based design decisions

06 Azure subscriptions and resource governance

6 topics · 8 practice items

TOPICS

- Introduction to Microsoft Azure
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- Overview of Microsoft Azure
- Cloud Computing Models: IaaS, PaaS, SaaS
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- Manage Azure Resource Groups – Tags, Locks, RBAC, Policies

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08 Azure DevOps setup and culture

9 topics

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7 topics

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- How to create queries, Charts and Dashboards
- Creating Custom process and work items

10 Azure Repos and collaborative Git

12 topics · 5 practice items

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- Installing Git
- Working with Remote Repositories
- Branching and Merging in Git
- Git workflows
- Git cheat sheet
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- Pulling and Pushing repositories from Azure Repo server
- Ignoring certain files
- Difference between Merge and Rebase.
- Creating Development Environments and performing pull requests and approval.

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8 topics · 6 practice items

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- Implementing ARM Templates
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- Provisioning and Configuring Environments with Azure DevTest Labs
- Introduction to Desired State Configuration

HANDS-ON PRACTICE

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12 Azure build and release pipelines

17 topics · 7 practice items

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- Continuous Integration
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- Environments and Tasks
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HANDS-ON PRACTICE

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13 Azure Artifacts and package feeds

6 topics

TOPICS

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- Creating and using a Feed from Azure Artifacts
- Upstream Sources
- Working with views in Feed
- Creating a Package using pipeline

14 Azure containers and AKS

14 topics · 7 practice items

TOPICS

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- AKS Features
- Azure Container Eco System
- Azure Container Registry
- Azure Kubernetes Services (AKS)
- Azure Container Instances (ACI)
- ACI Connector for Kubernetes
- ACI - Virtual Kubelet
- Open Service Broker for Azure (tooling confirmed before practice)
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- Deploying Azure Kubernetes using Helm; Draft example (tooling confirmed before practice)
- Event-based Scripting using Brigade (tooling confirmed before practice)
- Create Dashboard and Visualization using Kashti (tooling confirmed before practice)

HANDS-ON PRACTICE

- Define your first Kubernetes pod
- Define your first replication controllers pod
- Working with Kubernetes replication controllers
- Working with Kubernetes Services
- Define & Working with Deployments
- Define & Working with Autoscaling
- Running Apache/Nginx Container in Kubernetes

Detailed syllabus — AWS Cloud Security & DevSecOps

01 Cloud security and DevSecOps foundations

9 topics · 2 practice items

TOPICS

- DevOps → DevSecOps (Shift Left Strategy)
- Shared Responsibility Model (All AWS Services)
- Threat Modeling (STRIDE, DREAD)
- OWASP Top 10 + OWASP Cloud Top 10
- Secure SDLC & DevSecOps Pipeline Design
- Security Design Principles (Least Privilege, Defense in Depth)
- Well-Architected Framework – Security Pillar
- Zero Trust Architecture (ZTA)
- Identity vs Resource Boundary Concepts

HANDS-ON PRACTICE

- Threat modeling for a sample app
- Identify risks in insecure architecture

02 IAM and advanced access controls

14 topics · 3 practice items

TOPICS

- IAM Users, Groups, Roles
- IAM Policies (Inline vs Managed)
- Policy Evaluation Logic (Explicit Deny)
- Permission Boundaries
- Session Policies
- Cross-Account Access
- STS & Temporary Credentials
- Identity Federation (SAML, OIDC)
- AWS SSO / IAM Identity Center
- Attribute-Based Access Control (ABAC)
- Service Control Policies (SCPs)
- Least Privilege Design
- Privilege Escalation Techniques (Exam-focused)
- IAM Access Analyzer (External Access detection)

HANDS-ON PRACTICE

- Cross-account role setup
- Detect and fix privilege escalation
- IAM policy debugging scenarios

03 Detection, logging and threat analysis

11 topics · 3 practice items

TOPICS

- CloudTrail (Org Trail, Insights, Lake)
- CloudWatch Logs, Metrics, Alarms
- VPC Flow Logs
- ELB & S3 Access Logs
- GuardDuty (All detectors)
- AWS Security Hub
- Amazon Detective
- AWS Inspector (EC2, ECR, Lambda)
- EventBridge Rules
- SNS for Alerting
- Automation triggers

HANDS-ON PRACTICE

- Setup centralized logging account
- Detect suspicious API activity
- GuardDuty findings analysis

04 Infrastructure and network security

11 topics · 3 practice items

TOPICS

- Security Groups vs NACLs
- Private vs Public Subnets

- NAT Gateway vs NAT Instance
- VPC Endpoints (Interface & Gateway)
- PrivateLink
- AWS WAF (Rules, Rate limiting)
- AWS Shield (Standard vs Advanced)
- Firewall Manager
- Network Firewall
- VPN & Direct Connect security
- DNS security (Route 53 Resolver, DNS Firewall)

HANDS-ON PRACTICE

- Build secure multi-tier VPC
- WAF rule implementation
- Block malicious IP traffic

05 Data protection and encryption

15 topics · 3 practice items

TOPICS

- Encryption at Rest vs In Transit
- Envelope Encryption
- TLS, ACM Certificates
- CMK Types (Customer vs AWS managed)
- Key Policies vs IAM Policies
- Grants
- Key Rotation
- Multi-Region Keys
- S3 Security (Block Public Access, Bucket Policies)
- EBS, EFS Encryption
- RDS Encryption
- DynamoDB Encryption
- Secrets Manager vs SSM Parameter Store
- Macie (PII detection)
- Backup Security (AWS Backup)

HANDS-ON PRACTICE

- KMS key policy troubleshooting
- Secure S3 with encryption + access control
- Secrets rotation implementation

06 Application and CI/CD security

12 topics · 3 practice items

TOPICS

- Pipeline Security (Jenkins, GitHub Actions, GitLab CI)
- Secrets Handling in Pipelines
- Artifact Security
- SAST (Static Analysis)
- DAST (Dynamic Testing)
- SCA (Dependency Scanning)
- Docker Hardening
- ECR Scan (Native + Trivy/Grype)
- SBOM (Software Bill of Materials)
- API Gateway Security (Auth, throttling)
- Lambda Security (IAM, env variables)
- Step Functions security

HANDS-ON PRACTICE

- Build secure CI/CD pipeline
- Integrate SAST + container scanning
- Break & fix vulnerable pipeline

07 Container and Kubernetes security

10 topics · 3 practice items

TOPICS

- Docker security best practices
- Rootless containers
- Image signing (cosign)
- IAM Roles for Service Accounts (IRSA)

- Pod Security Standards
- Network Policies
- RBAC Deep Dive
- Admission Controllers (OPA/Gatekeeper)
- Secrets encryption in etcd
- Runtime security tools (Falco)

HANDS-ON PRACTICE

- Secure EKS cluster setup
- RBAC + IRSA implementation
- Scan Kubernetes workloads

08 Incident response and automation

9 topics · 3 practice items

TOPICS

- Preparation → Detection → Containment → Recovery
- GuardDuty + Security Hub integration
- CloudTrail forensic analysis
- AWS Systems Manager for remediation
- Lambda-based IR automation
- Step Functions for workflows
- Automated quarantine (EC2 isolation)
- Snapshot analysis
- Log correlation

HANDS-ON PRACTICE

- Simulate brute force attack
- Auto-isolate compromised EC2
- Build IR automation pipeline

09 Governance, risk and compliance

11 topics · 3 practice items

TOPICS

- AWS Organizations
- SCP Strategy Design
- Multi-account security architecture
- AWS Config Rules
- AWS Audit Manager
- AWS Artifact
- CIS Benchmarks
- NIST, ISO 27001 basics
- GDPR concepts (high-level)
- Terraform Security (tfsec, Checkov)
- CloudFormation Guard

HANDS-ON PRACTICE

- Enforce compliance via SCP
- Scan Terraform for vulnerabilities
- Config rule violations remediation

10 Advanced security architecture

6 topics

TOPICS

- Cross-region DR security
- Secure Multi-account Architecture (Landing Zone)
- AWS Control Tower security
- Data exfiltration prevention strategies
- Chaos Engineering for security
- Red Team vs Blue Team basics

11 End-to-end DevSecOps security capstone

8 topics

TOPICS

- GitHub → CI/CD → Build → Scan → Deploy (EKS)
- IAM least privilege
- Secrets Manager integration
- SAST + SCA + Image Scan
- KMS encryption
- WAF protection
- GuardDuty monitoring
- Incident response automation

Detailed syllabus — AI + DevOps — AIOps & MLOps Foundations

01 AI in DevOps

5 topics · 9 practice items

Practice uses reviewed inputs, budget/privacy controls and human approval before changes; sandbox or simulated remediation only.

TOPICS

- Introduction to AI in DevOps
- Generative AI for Developers
- GitHub Copilot, Amazon Q Developer (formerly CodeWhisperer), Azure Copilot
- AI-assisted coding for Infrastructure as Code (Terraform, Ansible)
- Use cases: Faster scripting, automated test generation, and pipeline optimization

HANDS-ON PRACTICE

- AI-assisted Terraform Lab
- Setup Terraform with AWS provider
- Use Amazon Q Developer (formerly CodeWhisperer) in VS Code; Cloud9 setup (tooling confirmed before practice) to auto-generate Terraform resources (EC2, S3)
- Validate and apply the generated infra
- AI-assisted Ansible Lab
- Write an Ansible Playbook with Copilot assistance to configure an Apache web server
- Compare AI-generated vs manually written playbook
- DevOps Chatbot Demo
- Use Bedrock or OpenAI API to create a simple ChatOps assistant that responds to pipeline status queries

02 AIOps and MLOps foundations

5 topics · 11 practice items

Practice uses reviewed inputs, budget/privacy controls and human approval before changes; sandbox or simulated remediation only.

TOPICS

- What is AIOps?
- Intelligent monitoring & anomaly detection
- AI for log analysis & summarization
- Integrating AI with CloudWatch & Bedrock
- MLOps basics: training, deployment, and monitoring

HANDS-ON PRACTICE

- CloudWatch Anomaly Detection Lab
- Enable anomaly detection on EC2 CPU utilization metric
- Generate synthetic load and observe anomaly detection alarms
- AI Log Summarization Lab
- Stream application logs to CloudWatch Logs
- Use AWS Bedrock (LLM) to summarize errors and incidents
- Build Lambda function that auto-summarizes logs & posts to Slack/MS Teams
- Mini MLOps Lab
- Train a small ML model (sklearn or TensorFlow) locally
- Package model in Docker and deploy to EKS or SageMaker endpoint
- Automate deployment with CI/CD pipeline

03 AI-powered monitoring and controlled remediation

3 topics · 11 practice items

Practice uses reviewed inputs, budget/privacy controls and human approval before changes; sandbox or simulated remediation only.

TOPICS

- Self-healing infrastructure with AI

- Integrating AI with CloudWatch, Bedrock, and Lambda
- Real-world use case: auto-remediation of incidents

HANDS-ON PRACTICE

- AI-Powered Monitoring Lab
- Connect CloudWatch metrics (EC2, RDS, S3) to Bedrock
- Create a dashboard that visualizes anomalies & AI insights
- AI-Driven Remediation Lab
- Setup Lambda function triggered on anomaly detection alarm
- Use Bedrock/LLM to classify issue & recommend fix
- Auto-execute remediation script (e.g., restart EC2, scale ASG, redeploy pod in EKS)
- Final Project – AI-Integrated Ops Dashboard
- Build a dashboard in Grafana that shows metrics, anomalies, and AI summaries
- Simulate failure → AI detects, summarizes, and remediates automatically
- Deliverable: Live demo of self-healing system

Frequently asked questions

Can I join only one course?

Yes. Each of the five tracks can be offered independently. Integrated-cohort learners receive one coordinated pathway across the tracks.

Is the programme suitable for beginners?

The early weeks introduce Linux, networking, Git and cloud basics. Students who lack scripting or operating-system experience should complete the recommended preparation exercises.

How practical is the programme?

Each module has a required lab or applied exercise, and the programme specifies six capstone projects with assessment evidence and live demonstrations.

Does this guarantee AWS or Microsoft certification?

No. The AWS architecture track is aligned to SAA-C03 preparation, and the Azure track covers administration and introductory architecture foundations. Official exam registration and certification are separate.

Do I need my own AWS or Azure account?

Account requirements and lab credits vary by batch. Learners receive a cost-conscious lab plan and must follow budget and resource cleanup instructions.

Will I learn both Jenkins and GitHub Actions?

Yes. Jenkins and GitHub Actions are taught through a shared CI/CD progression, including security checks and approval workflows.

Will AI make live infrastructure changes automatically?

The teaching model requires human approval for live-changing actions. Automatic remediation is practised only in isolated simulation or expressly authorized sandbox environments.

Do you provide recordings, certificates, placement assistance or exam vouchers?

Availability and terms depend on the announced batch. Enquire with the training provider for confirmed inclusions and conditions.

Course content is reviewed and may be updated. Fees, batch dates, delivery format and practice environment are confirmed separately. This document does not promise certification, job placement or a hosted lab platform.

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CLASS TIME	8:00 to 9:30 PM EST
OPEN TO	Students in the USA, Africa and worldwide

ENROL OR ASK A QUESTION

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