

Model Curriculum

QP Name: AI DevOps Analyst

QP Code: SSC/Q8112

QP Version: 4.0

NSQF Level: 5

Model Curriculum Version: 4.0

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Training Parameters

Sector	IT-ITeS
Sub-Sector	Future Skills
Occupation	Artificial Intelligence & Big Data Analytics
Country	India
NSQF Level	5
Aligned to NCO/ISCO/ISIC Code	NCO - 2015/251.NIL
Minimum Educational Qualification and Experience	**Relevant Experience in job roles related to AI/Computer Science/IT The relevant experience would include work, internship and apprenticeship undertaken post-completion of relevant educational qualifications * PG/UG/diploma with courses related to Engg./ Science Completed UG Diploma* OR Completed 3Y UG Diploma* after 10th with 1.5 years of relevant experience** OR Previous Relevant qualification of NSQF level 4.5 with 1.5 years of relevant experience**
Pre-Requisite License or Training	NA
Minimum Job Entry Age	NA
Last Reviewed On	07 th October 2025
Next Review Date	07 th October 2028
NSQC Approval Date	07 th October 2025
QP Version	4.0
Model Curriculum Creation Date	07 th October 2025
Model Curriculum Valid Up to Date	07 th October 2028
Model Curriculum Version	4.0
Minimum Duration of the Course	480 hours
Maximum Duration of the Course	480 hours

Program Overview

This section summarizes the end objectives of the program along with its duration.

Training Outcomes

At the end of the program, the learner should have acquired the listed knowledge and skills.

- Explain project management concepts and frameworks for requirement gathering, and identify key stakeholders to align project objectives with business goals.
- Describe Agile methodologies (e.g., Scrum, Kanban) and participate effectively in Agile ceremonies to enhance team collaboration.
- Demonstrate proficiency in Git for version control, including branching and pull requests, to manage collaborative code changes.
- Define the CI/CD lifecycle, set up automated pipelines using tools like Jenkins or GitLab CI, and integrate automated testing.
- Implement unit, integration, and end-to-end testing to ensure software quality and automate their execution in CI/CD pipelines.
- Analyze cloud computing services (AWS, Azure, GCP) and provision resources using Infrastructure as Code (IaC) tools like Terraform.
- Apply configuration management principles using tools like Ansible, Chef, or Puppet to maintain consistent environments.
- Utilize monitoring tools to collect metrics on performance and analyze application performance to identify bottlenecks.
- Implement auto-scaling and load balancing solutions, and develop disaster recovery plans for business continuity.
- Integrate DevSecOps practices in CI/CD pipelines, including security scans and role-based access controls.
- Develop incident response plans, conduct post-incident analyses, and foster continuous improvement through feedback loops.

Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP.

NOS and Module Details	Theory Duration (In Hours)	Practical Duration (In Hours)	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration (In Hours)
SSC/N8120 – Develop tools, processes and mechanisms for continuous integration and delivery NOS Version No. 4 NSQF Level 5	50:00	40:00	30:00	00:00	120:00
Module 1: Understand Project Goals & Stakeholders	5:00	4:00	3:00	0:00	12:00
Module 2: Software development methodologies	5:00	4:00	3:00	0:00	12:00

Module 3: Version Control Systems	5:00	4:00	3:00	0:00	12:00
Module 4: Continuous Integration and Continuous Delivery (CI/CD)	5:00	4:00	3:00	0:00	12:00
Module 5: Testing Strategies	5:00	4:00	3:00	0:00	12:00
Module 6: Infrastructure Requirements	5:00	4:00	3:00	0:00	12:00
Module 7: Configuration Management	5:00	4:00	3:00	0:00	12:00
Module 8: Logging and Analysis	4:00	3:00	3:00	0:00	10:00
Module 9: Security and Compliance	4:00	3:00	2:00	0:00	9:00
Module 10: User Feedback and Incident Management	4:00	3:00	2:00	0:00	9:00
Module 11: Disaster Recovery Strategies	3:00	3:00	2:00	0:00	8:00
SSC/N8155– Develop and maintain CI/CD pipelines NOS Version No. 1 NSQF Level 5	65:00	55:00	30:00	00:00	150:00
Module 12: CI/ CD, Build automation & testing	37:00	30:00	20:00	00:00	87:00
Module 13: Deployment, Monitoring, and Continuous Improvement	28:00	25:00	10:00	00:00	63:00
SSC/N8156– Infrastructure management for training and deploying AI models NOS Version No. 1 NSQF Level 5	65:00	55:00	30:00	00:00	150:00
Module 14: Infrastructure Provisioning and Configuration Management	19:00	15:00	10:00	00:00	44:00
Module 15: Scalability, Backup, and Disaster Recovery	19:00	14:00	10:00	00:00	43:00
Module 16: Incident Management, Updates, and Continuous Improvement	14:00	13:00	05:00	00:00	32:00
Module 17: Infrastructure Efficiency and Innovation	13:00	13:00	05:00	00:00	31:00
DGT/VSQ/N0102 Employability Skill (60 Hours) NOS Version No.1 NSQF Level 4	24:00	36:00	00:00	00:00	60:00
Module 18: Introduction to Employability Skills	00:30	01:00	00:00	00:00	01.50
Module 19: Constitutional values - Citizenship	00:30	01:00	00:00	00:00	01.50
Module 20: Becoming a Professional in the 21st Century	01:00	01:30	00:00	00:00	02.50
Module 21: Basic English Skills	04:00	06:00	00:00	00:00	10.00
Module 22: Career Development & Goal Setting	01:00	01:00	00:00	00:00	02.00

Module 23: Communication Skills	02:00	03:00	00:00	00:00	05.00
Module 24: Diversity & Inclusion	01:00	01:30	00:00	00:00	02.50
Module 25: Financial and Legal Literacy	02:00	03:00	00:00	00:00	05.00
Module 26: Essential Digital Skills	04:00	06:00	00:00	00:00	10.00
Module 27: Entrepreneurship	03:00	04:00	00:00	00:00	07.00
Module 28: Customer Service	02:00	03:00	00:00	00:00	05.00
Module 29: Getting ready for apprenticeship & Jobs	03:00	05:00	00:00	00:00	08.00
Total Duration	204:00	186:00	90:00	00:00	480:00

Module Details

Module 1: Understand Project Goals & Stakeholders

Mapped to SSC/N8120

Terminal Outcomes:

- Discuss project management fundamentals.
- Explain customer needs and success criteria using sample case studies.
- Document key stakeholders and their expectations.

Duration (In Hours): 05:00	Duration (In Hours): 04:00 (+03:00 OJT)
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
• Discuss the project management fundamentals • Explain different customer needs and success criteria using a sample case study • Discuss the frameworks for requirement gathering	• Develop project goals based on a provided case study • Document key stakeholders and their expectations in a sample case study or project.
Classroom Aids:	
• PC/Laptop with internet • Whiteboard and Markers • Chart paper and sketch pens • LCD Projector and Laptop for presentations	
Tools, Equipment and Other Requirements	
• Trello for project management): Free online tool for organizing tasks and project workflows. • Miro (for collaborative whiteboarding): Free online tool for brainstorming and mapping out ideas.	

Module 2: Software Development Methodologies

Mapped to SSC/N8120

Terminal Outcomes:

- Explain Agile, Scrum, and Kanban methodologies.
- Discuss roles in Agile (Product Owner, Scrum Master, Development Team).
- Conduct a simulated Agile sprint planning session.

Duration (In Hours): 05:00	Duration (In Hours): 04:00 (+03:00 OJT)
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
• Explain about the Agile, Scrum, and Kanban methodologies • Discuss the roles in Agile (Product Owner, Scrum Master, Development Team) • Discuss the impact of methodologies on collaboration and timelines	• Conduct a simulated Agile sprint planning session • Create a Kanban board, defining tasks for a mock project
Classroom Aids:	
• PC/Laptop with internet • Whiteboard and Markers • Chart paper and sketch pens • LCD Projector and Laptop for presentations	
Tools, Equipment and Other Requirements	
• Jira (Agile project management): Free tier available for small teams. • Trello for project management): Free online tool for organizing tasks and project workflows.	

Module 3: Version Control Systems

Mapped to SSC/N8120

Terminal Outcomes:

- Discuss version control concepts and importance.
- Explain Git workflows (branching, merging, pull requests).
- Demonstrate cloning repositories, creating branches, making commits, and submitting pull requests.

Duration (In Hours): 05:00	Duration (In Hours): 04:00 (+03:00 OJT)
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
• Discuss version control concepts and importance • Explain about the Git and Git workflows (branching, merging, pull requests)	• Demonstrate cloning repositories, creating branches, making commits, and submitting pull requests
Classroom Aids:	
• PC/Laptop with internet • Whiteboard and Markers • Chart paper and sketch pens • LCD Projector and Laptop for presentations	
Tools, Equipment and Other Requirements	
• Git (version control system): Open-source tool for managing code changes. • GitHub or GitLab (for hosting Git repositories): Free tiers available for public and private repositories.	

Module 4: Continuous Integration and Continuous Delivery (CI/CD)

Mapped to SSC/N8120

Terminal Outcomes:

- Explain CI/CD lifecycle and its benefits.
- Discuss various CI/CD tools available.
- Set up a CI/CD pipeline using tools like Jenkins or GitLab CI.
- Create build scripts for automated testing and deployment.

Duration (In Hours): 05:00	Duration (In Hours): 04:00 (+03:00 OJT)
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
• Explain continuous integration, delivery and deployment (CI/CD) lifecycle • Assess different CI/CD strategies, models and best-practices for faster and better software deployments • Discuss the variations in CI/CD pipeline for different products such as desktop applications, mobile applications, or web applications • Define suitable performance metrics for the CI/CD pipeline • Discuss the importance of identifying suitable stakeholders for managing the administration of production systems	• Set up a CI/CD pipeline using a tool like Jenkins or GitLab CI • Create build scripts for automated testing and deployment • Run a sample project through the CI/CD pipeline
Classroom Aids:	
• PC/Laptop with internet • Whiteboard and Markers • Chart paper and sketch pens • LCD Projector and Laptop for presentations	
Tools, Equipment and Other Requirements	
• Git (version control system): Open-source tool for managing code changes. • GitHub or GitLab (for hosting Git repositories): Free tiers available for public and private repositories.	

Module 5: Testing strategies

Mapped to SSC/N8120

Terminal Outcomes:

- Discuss different types of testing (unit tests, integration tests, end-to-end tests).
- Explain the importance of automated testing in CI/CD pipelines.
- Write unit tests for a codebase using frameworks like JUnit or pytest.
- Integrate tests into the CI pipeline to automatically run on code changes.

Duration (In Hours): 05:00	Duration (In Hours): 04:00 (+03:00 OJT)
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
• Explain Different types of tests: unit tests, integration tests, and end-to-end tests • Explain the importance of automated testing in CI/CD pipelines	• Write unit tests for a codebase using frameworks like JUnit or pytest • Integrate tests into the CI pipeline to automatically run on code changes
Classroom Aids:	
• PC/Laptop with internet • Whiteboard and Markers • Chart paper and sketch pens • LCD Projector and Laptop for presentations	
Tools, Equipment and Other Requirements	
• JUnit: Open-source unit testing framework for Java. • pytest: Open-source testing framework for Python. • Selenium: Open-source tool for browser automation in testing.	

Module 6: Infrastructure Requirements

Mapped to SSC/N8120

Terminal Outcomes:

- Understand cloud computing concepts and services (AWS, Azure, GCP).
- Discuss infrastructure scaling considerations and resource allocation.
- Conduct hands-on lab to provision cloud resources using IaC tools

Duration (In Hours): 05:00	Duration (In Hours): 04:00 (+03:00 OJT)
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
• Explain cloud computing concepts and services (AWS, Azure, GCP) • Elaborate the infrastructure scaling considerations and resource allocation	• Conduct a hands-on lab to provision cloud resources using IaC tools (Terraform or AWS CloudFormation) • Create a basic infrastructure setup for a web application in the cloud
Classroom Aids:	
• PC/Laptop with internet • Whiteboard and Markers • Chart paper and sketch pens • LCD Projector and Laptop for presentations	
Tools, Equipment and Other Requirements	
• Terraform: Open-source IaC tool for provisioning cloud resources. • AWS CloudFormation: Provides a way to model and set up AWS resources.	

Module 7: Configuration Management

Mapped to SSC/N8120

Terminal Outcomes:

- Discuss the importance of configuration management and associated best practices.
- Describe key principles of configuration management.
- Apply different approaches to configure roles in configuration management tools such as Ansible.
- Set up a master-agent architecture using a configuration management tools

Duration (In Hours): 05:00	Duration (In Hours): 04:00 (+03:00 OJT)
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
• Discuss the importance of configuration management and the best practices associated with it • Describe the key principles of configuration management • Discuss the principles of master-agent architecture in configuration management tools such as Puppet • Discuss the features of different configuration management tools	• Apply different approaches to configure roles in configuration management tools such as Ansible • Use different tools for management and automation of configuration, such as Puppet, Chef, Ansible • Setup a master-agent architecture using a configuration management tool such as Puppet • Use playbooks to manage configurations of remote machines, sequence multi-tier rollouts and delegate actions to other hosts
Classroom Aids:	
• PC/Laptop with internet • Whiteboard and Markers • Chart paper and sketch pens • LCD Projector and Laptop for presentations	
Tools, Equipment and Other Requirements	
• Ansible: Open-source automation tool for configuration management. • Puppet: Open-source configuration management tool (community edition).	

Module 8: Logging and analysis

Mapped to SSC/N8120

Terminal Outcomes:

- Discuss the importance of logging for troubleshooting and performance monitoring.
- Explain tools for log aggregation and analysis (ELK Stack).
- Configure logging for a sample application and integrate it with the ELK Stack.

Duration (In Hours): 04:00	Duration (In Hours): 03:00 (+03:00 OJT)
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
• Discuss the importance of logging for troubleshooting and performance monitoring • Explain the tools for log aggregation and analysis (ELK Stack, Splunk)	• Configure logging for a sample application and integrate with the ELK Stack • Analyze logs to identify performance bottlenecks and issues
Classroom Aids:	
• PC/Laptop with internet • Whiteboard and Markers • Chart paper and sketch pens • LCD Projector and Laptop for presentations	
Tools, Equipment and Other Requirements	
• ELK Stack: ➤ Elasticsearch: Open-source search and analytics engine. ➤ Logstash: Open-source data processing pipeline that ingests data. ➤ Kibana: Open-source analytics and visualization platform for Elasticsearch. • Fluentd: Open-source data collector for unified logging.	

Module 9: Security and Compliance

Mapped to SSC/N8120

Terminal Outcomes:

- Explain DevSecOps principles and key security practices in DevOps.
- Overview of regulatory compliance (GDPR, HIPAA) and their impacts on development.
- Perform a security assessment of a sample application, focusing on vulnerabilities and compliance gaps.

Duration (In Hours): 04:00	Duration (In Hours): 03:00 (+02:00 OJT)
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
• Discuss DevSecOps and key security practices in DevOps • Explain the overview of regulatory compliance (GDPR, HIPAA, etc.) and their impacts on development	• Perform a security assessment of a sample application, focusing on vulnerabilities and compliance gaps • Integrate automated security testing into the CI/CD pipeline using tools like Snyk or OWASP ZAP
Classroom Aids:	
• PC/Laptop with internet • Whiteboard and Markers • Chart paper and sketch pens • LCD Projector and Laptop for presentations	
Tools, Equipment and Other Requirements	
• Snyk: Open-source tool for finding and fixing vulnerabilities in application dependencies. • OWASP ZAP: Open-source web application security scanner that helps find security vulnerabilities. • HashiCorp Vault: Open-source tool for securing access to secrets and protecting sensitive data.	

Module 10: User Feedback and Incident Management

Mapped to SSC/N8120

Terminal Outcomes:

- Explain methods for collecting user feedback and its importance in product development.
- Discuss incident management processes, including diagnosing issues and communication protocols.

Duration (In Hours): 04:00	Duration (In Hours): 03:00 (+02:00 OJT)
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
• Explain the methods for collecting user feedback and its importance in product development • Explain incident management processes, including diagnosing issues and communication protocols	• Conduct exercise to handle a mock incident, including communications and recovery strategies • Create a user feedback mechanism (e.g., surveys, feedback forms) for an application
Classroom Aids:	
• PC/Laptop with internet • Whiteboard and Markers • Chart paper and sketch pens • LCD Projector and Laptop for presentations	
Tools, Equipment and Other Requirements	
• Google Forms: Free tool for creating surveys and collecting feedback. • Trello or Jira: For incident tracking and management. • Slack: For team communication during incident management.	

Module 11: Disaster Recovery Strategies

Mapped to SSC/N8120

Terminal Outcomes:

- Discuss disaster recovery concepts and strategies for business continuity.
- Create and implement disaster recovery plans, considering various failure scenarios.

Duration (In Hours): 03:00	Duration (In Hours): 03:00 (+02:00 OJT)
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
• Discuss the overview of disaster recovery concepts and strategies for business continuity	• Develop a disaster recovery plan for a sample application, considering various failure scenarios
Classroom Aids:	
• PC/Laptop with internet • Whiteboard and Markers • Chart paper and sketch pens • LCD Projector and Laptop for presentations	
Tools, Equipment and Other Requirements	
• AWS Backup: Service for automating backup across AWS services. • Azure Site Recovery: Service to ensure business continuity by keeping applications running during outages. • Google Cloud's Backup and DR: Tools for disaster recovery services.	

Module 12: CI/CD, Build automation and testing

Mapped to SSC/N8155

Terminal Outcomes:

- Explain CI/CD concepts and benefits.
- Discuss Agile methodologies and ceremonies relevant to CI/CD.
- Explain critical stages of the CI/CD pipeline (build, test, deploy, release).
- Set up a CI/CD pipeline using tools like Jenkins or GitLab CI.
- Integrate various tests into the CI/CD pipeline.

Duration (In Hours): 37:00	Duration (In Hours): 30:00 (+20:00 OJT)
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
• Explain the CI/CD concepts and benefits • Discuss the Agile methodologies and ceremonies • Explain the critical stages of the pipeline (build, test, deploy, release) • Provide an overview of various CI/CD tools • Explain the triggers for pipeline execution • Discuss the branching strategies	• Discuss different case studies on CI/CD • Demonstrate a mock agile ceremony • Draw and document a sample pipeline for a mock project • Demonstrate a CI/CD tool • Configure a sample pipeline trigger in Jenkins or GitLab CI • Implement Git Flow in a sample repository

• Explain the scripts building using tools like Maven, Gradle, or npm • Set up an artefact repository (Nexus, Artifactory) • Integrate unit, integration, and functional tests into CI/CD • Automate test execution and integration into the CI/CD pipeline	• Create build scripts for a sample application • Configure and use an artifact repository • Write unit tests, integration tests, and functional tests using appropriate frameworks (JUnit, Selenium, etc.) • Implement automated testing in the CI/CD pipeline
Classroom Aids:	
• PC/Laptop with internet • Whiteboard and Markers • Chart paper and sketch pens • LCD Projector and Laptop for presentations	
Tools, Equipment and Other Requirements	
• Jenkins: Open-source automation server that supports building, deploying, and automating software development. • GitLab CI: Integrated continuous integration and deployment functionality offered in GitLab. • Travis CI: Continuous integration service used to build and test GitHub projects. • Maven / Gradle: Build automation tools commonly used for Java projects. • Sonatype Nexus or JFrog Artifactory: Artifact repository solutions that help manage binaries and dependencies.	

Module 13: Deployment, Monitoring, and Continuous Improvement

Mapped to SSC/N8155

Terminal Outcomes:

- Create scripts for automated deployment using tools like Ansible or Kubernetes.
- Implement rollback strategies and manage configurations for different environments.
- Integrate monitoring tools and use logging frameworks.
- Define success metrics and emphasize documentation practices for CI/CD pipelines.

Duration (In Hours): 28:00	Duration (In Hours): 25:00 (+10:00 OJT)
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
• Create scripts for automated deployment using tools like Ansible or Kubernetes • Implement rollback strategies and manage configurations for environments • Explain the monitoring tools integration • Use logging frameworks • Maintain and update CI/CD tools and ensure security in the pipeline • Define success metrics and the importance of CI/CD documentation	• Write a deployment script using Ansible • Create a rollback strategy and environment configurations • Set up monitoring for a sample application • Implement ELK stack for logging and visualisation • Integrate security scanning tools in CI/CD • Create documentation for a CI/CD pipeline • Set up notifications in the CI/CD pipeline
Classroom Aids:	

- PC/Laptop with internet
- Whiteboard and Markers
- Chart paper and sketch pens
- LCD Projector and Laptop for presentations

Tools, Equipment and Other Requirements

- Ansible: Open-source automation tool for application deployment and configuration management.
- Chef: Automates infrastructure provisioning and management.
- Kubernetes: Container orchestration platform that automates the deployment, scaling, and management of containerized applications.
- Prometheus: Monitoring and alerting toolkit built for reliability and scalability.
- Grafana: Open-source analytics and monitoring solution for visualizing metrics and logs.
- ELK Stack: Combination of Elasticsearch, Logstash, and Kibana for centralized logging and analysis.

Module 14: Infrastructure Provisioning and Configuration Management

Mapped to SSC/N8156

Terminal Outcomes:

- Understand Infrastructure as Code (IaC) concepts and benefits.
- Discuss the importance of version control for infrastructure code.
- Use configuration management tools to maintain consistent environments across development, staging, and production.

Duration (In Hours): 19:00	Duration (In Hours): 15:00 (+10:00 OJT)
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
• Introduction to IaC and its benefits in AI environments. • Discuss the benefits of storing infrastructure code in Git; version control best practices. • Explain the overview of configuration management tools (Ansible, Chef, Puppet) and their roles in maintaining consistent environments. • Discuss the importance of ensuring that all environments (development, staging, production) are standardized. • Introduction to monitoring tools (Prometheus, Grafana, Datadog) and key performance metrics.	• Provision resources using Terraform to create an AI environment. • Utilize Git to track changes in infrastructure code; collaborative repository setup. • Automate configuration of servers and applications using Ansible in a sample AI application setup. • Create configurations for multiple environments and demonstrate consistent deployments. • Set up tools to monitor the performance and health of a deployed AI environment.
Classroom Aids:	
• PC/Laptop with internet • Whiteboard and Markers • Chart paper and sketch pens • LCD Projector and Laptop for presentations	
Tools, Equipment and Other Requirements	
• Terraform: Open-source tool for building, changing, and versioning infrastructure safely and efficiently.	

- AWS CloudFormation: Service that helps manage AWS resources using templates.
- Ansible or Chef: Tools for configuration management, automating the setup and management

Module 15: Scalability, Backup, and Disaster Recovery

Mapped to SSC/N8156

Terminal Outcomes:

- Explore auto-scaling strategies and the role of load balancers.
- Understand the importance of backup solutions for critical data.
- Develop and implement disaster recovery plans and failover strategies.

Duration (In Hours): 19:00	Duration (In Hours): 14:00 (+10:00 OJT)
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
• Explore auto-scaling strategies for infrastructure to handle varying workloads. • Explain the role of load balancers in distributing incoming traffic to improve performance and reliability. • Discuss the importance of backup solutions for critical data in AI applications. • Develop and implement disaster recovery plans; failover strategies and restoration procedures. • Explain integrating security into CI/CD pipelines; security scans and compliance checks.	• Implement auto-scaling on AWS or Azure for compute instances based on traffic demands. • Configure an application load balancer for a sample AI application. • Set up automated backup processes for an AI application using cloud services (e.g., AWS Backup). • Create and test a disaster recovery plan for an AI application. • Implement security practices and tools in the CI/CD pipeline for an AI application.
Classroom Aids:	
• PC/Laptop with internet • Whiteboard and Markers • Chart paper and sketch pens • LCD Projector and Laptop for presentations	
Tools, Equipment and Other Requirements	
• AWS Auto Scaling: Service that automatically adjusts the capacity of AWS resources. • Azure Autoscale: Automatically adjusts resources to match demand on Azure. • AWS Elastic Load Balancing or Azure Load Balancer: Services to distribute incoming application traffic across multiple targets. • AWS Backup / Azure Backup: Cloud services for automated backups of cloud-based applications and databases. • Bacula or Restic: Open-source tools for backup solutions.	

Module 16: Incident Management, Updates, and Continuous Improvement

Mapped to SSC/N8156

Terminal Outcomes:

- Define incidents and the incident management lifecycle.
- Create and implement plans for responding to infrastructure incidents.
- Identify and address underlying issues to prevent future incidents.
- Schedule and automate updates for security patches and applications.

Duration (In Hours): 14:00	Duration (In Hours): 13:00 (+05:00 OJT)
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
• Define incidents, categories, and typical impacts on AI applications. • Introduce the Incident Management Lifecycle, including preparation, detection, response, and recovery. • Create and implement plans for responding to infrastructure incidents. • Identify and address underlying issues to prevent future occurrences. • Schedule and automate updates for operating systems, applications, and security patches. • Cover the procedures for scheduling and automating updates for operating systems, applications, and security patches, emphasizing the need for testing in staging environments. • Discuss the change management process, including assessment, approval, and rollback processes if updates fail. • Discuss the role of monitoring tools (Prometheus, Grafana, Datadog) in tracking performance metrics and identifying potential incidents.	• Demonstrate incident diagnosis and resolution including post incident analysis • Create documentation for the response executed during the simulation, including cause analysis and action taken. • Perform a simulated update of a software service in a staging environment, documenting each step, including rollback strategies if the update fails. • Set up monitoring dashboards, displaying key metrics from a sample AI application, allowing real-time alerts to be established.
Classroom Aids:	
• PC/Laptop with internet • Whiteboard and Markers • Chart paper and sketch pens • LCD Projector and Laptop for presentations	
Tools, Equipment and Other Requirements	
• Atlassian Jira: For tracking incidents, managing service requests, and documenting processes. • Prometheus: For monitoring systems and configuring alerts based on performance metrics. • Grafana: Visualization tool for monitoring metrics and logs. • ServiceNow or Jira Service Management: Tools for incident management and tracking.	

- Slack or Microsoft Teams: For communication during incident management.

Module 17: Infrastructure Efficiency and Innovation

Mapped to SSC/N8156

Terminal Outcomes:

- Discuss metrics for performance evaluation and explore performance tuning techniques.
- Understand cost management practices for cloud services.
- Evaluate and adopt emerging technologies relevant to AI infrastructure.

Duration (In Hours): 13:00	Duration (In Hours): 13:00 (+05:00 OJT)
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
• Discuss metrics and benchmarks for performance evaluation (e.g., response time, uptime, resource utilization) • Introduction to performance tuning techniques for both applications and underlying infrastructure. • Explore common cost management practices for cloud services, including rightsizing and resource scheduling. • Discuss the importance of budgeting and tracking costs in AI infrastructure. • Discuss advanced concepts of automation beyond provisioning, including self-healing infrastructure and automated scaling. • Introduce Infrastructure as Code (IaC) practices with further emphasis on automation tools. • Overview of emerging technologies relevant to AI infrastructure (e.g., serverless computing, edge computing) and their potential impact. • Overview of emerging technologies relevant to AI infrastructure (e.g., serverless computing, edge computing) and their potential impact.	• Analyze performance metrics from a deployed AI application and identify potential areas for optimization. • Implement tuning strategies based on findings (e.g., modifying instance types, adjusting load balancer configurations) • Use cloud provider tools to analyze costs and implement cost-saving measures (e.g., setting up on-demand vs. reserved instances). • Automate scaling using Terraform or CloudFormation templates to dynamically adjust resources based on load. • Conduct a mini project implementing a new tool or technology in a testing environment, documenting the outcomes.
Classroom Aids:	
• PC/Laptop with internet • Whiteboard and Markers • Chart paper and sketch pens • LCD Projector and Laptop for presentations	
Tools, Equipment and Other Requirements	
• AWS Cost Explorer or Azure Cost Management: Tools for visualizing, tracking, and optimizing cloud service costs. • CloudWatch or Azure Monitor: Monitoring services that provide insights into resource utilization and performance.	

- Serverless Framework: Open-source framework for building and deploying serverless applications.

Module 18: Introduction to Employability Skills

Mapped to NOS DGT/VSQ/N0102

Key Learning Outcomes:

- Discuss the Employability Skills required for jobs in various industries
- List different learning and employability related GOI and private portals and their usage

Duration :1.5 Hours (0.5 Theory + 1 Practical)

Module 19: Constitutional values - Citizenship

Mapped to NOS DGT/VSQ/N0102

Key Learning Outcomes:

- Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, caring and respecting others that are required to become a responsible citizen
- Show how to practice different environmentally sustainable practices

Duration:1.5 Hours (0.5 Theory + 1 Practical)

Module 20: Becoming a Professional in the 21st Century

Mapped to NOS DGT/VSQ/N0102

Key Learning Outcomes:

- Discuss importance of relevant 21st century skills.
- Exhibit 21st century skills like Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn etc. in personal or professional life.
- Describe the benefits of continuous learning

Duration:2.5 Hours (1 Theory + 1.5 Practical)

Module 21: Basic English Skills

Mapped to NOS DGT/VSQ/N0102

Key Learning Outcomes:

- Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone
- Read and interpret text written in basic English

- Write a short note/paragraph / letter/e -mail using basic English

Duration: 10 Hours (4 Theory + 6 Practical)

Module 22: Career Development and Goal Setting

Mapped to NOS DGT/VSQ/N0102

Key Learning Outcomes:

- Create a career development plan with well-defined short- and long-term goals

Duration: 2 Hours (1 Theory + 1 Practical)

Module 23: Communication skills

Mapped to NOS DGT/VSQ/N0102

Key Learning Outcomes:

- Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette.
- Explain the importance of active listening for effective communication
- Discuss the significance of working collaboratively with others in a team

Duration: 5 Hours (2 Theory + 3 Practical)

Module 24: Diversity and Inclusion

Mapped to NOS DGT/VSQ/N0102

Key Learning Outcomes:

- Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD
- Discuss the significance of escalating sexual harassment issues as per POSH

Duration: 2.5 Hours (1 Theory+ 1.5 Practical)

Module 25: Financial and Digital Literacy

Mapped to NOS DGT/VSQ/N0102

Key Learning Outcomes:

- Outline the importance of selecting the right financial institution, product, and service
- Demonstrate how to carry out offline and online financial transactions, safely and securely

Duration: 5 Hours (2 Theory+ 3 Practical)

Module 26: Essential Digital Skills

Mapped to NOS DGT/VSQ/N0102

Key Learning Outcomes:

- Describe the role of digital technology in today's life
- Demonstrate how to operate digital devices and use the associated applications and features, safely and securely
- Discuss the significance of displaying responsible online behaviour while browsing, using various social media platforms, e-mails, etc., safely and securely
- Create sample word documents, excel sheets and presentations using basic features
- utilize virtual collaboration tools to work effectively

Duration: 10 Hours (4 Theory+ 6 Practical)

Module 27: Entrepreneurship

Mapped to NOS DGT/VSQ/N0102

Key Learning Outcomes:

- Explain the types of entrepreneurship and enterprises
- Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan
- Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement
- Create a sample business plan, for the selected business opportunity

Duration: 7 Hours (3 Theory+ 4 Practical)

Module 28: Customer Service

Mapped to NOS DGT/VSQ/N0102

Key Learning Outcomes:

- Describe the significance of analysing different types and needs of customers
- Explain the significance of identifying customer needs and responding to them in a professional manner.
- Discuss the significance of maintaining hygiene and dressing appropriately

Duration: 5 Hours (2 Theory+ 3 Practical)

Module 29: Getting Ready for Apprenticeship and Jobs

Mapped to NOS DGT/VSQ/N0102

Key Learning Outcomes:

- Create a professional Curriculum Vitae (CV)
- Use various offline and online job search sources such as employment exchanges, recruitment agencies, and job portals respectively
- Discuss the significance of maintaining hygiene and confidence during an interview
- Perform a mock interview
- List the steps for searching and registering for apprenticeship opportunities

Duration: 8 Hours (3 Theory+ 5 Practical)

Annexure

Trainer Requirements

1.	Trainer's Qualification and experience in the relevant sector (in years) (as per NCVET guidelines)	Educational Qualification: Graduate (Engineering/ Technology/ Computer Science) Industry & training experience: 2 years of industry experience in AIBDA. The industry experience would include work, internship, and apprenticeship undertaken after regular graduation Certification: "Trainer" mapped to the Qualification Pack "MEP/Q2601" Minimum accepted score is 80% aggregate
2.	Master Trainer's Qualification and experience in the relevant sector (in years) (as per NCVET guidelines)	Educational Qualification: Graduate (Engineering/ Technology/ Computer Science) Industry & training experience: 4 years of industry experience in AIBDA. The full-time experience would include work, internship, and apprenticeship undertaken after regular graduation. Certification: "Master Trainer" mapped to the Qualification Pack "MEP/Q2602" Minimum accepted score is 90% aggregate
3.	Tools and Equipment Required for the Training	☒ Yes ☐ No (If "Yes", details to be provided in Annexure)
4.	In Case of Revised Qualification, details of Any Upskilling Required for Trainer	NA

Assessor Requirements

1.	Assessor's Qualification and experience in relevant sector (in years) (as per NCVET guidelines)	Educational Qualification: Graduate (Engineering/ Technology/ Computer Science) Industry & Training Experience: 2 years of industry experience in AIBDA. The full-time experience would include work, internship, and apprenticeship undertaken after regular graduation. Certification: "Assessor" mapped to the Qualification Pack "MEP/Q2701" Minimum accepted score is 80% aggregate.
2.	Proctor's Qualification and experience in relevant sector (in years) (as per NCVET guidelines), (wherever applicable)	Educational Qualification: Graduate (Engineering/ Technology/ Computer Science) Industry & Training Experience: 2 years of industry experience in AIBDA. The full-time experience would include work, internship, and apprenticeship undertaken after regular graduation. Certification: "Assessor" mapped to the Qualification Pack "MEP/Q2701" Minimum accepted score is 80% aggregate.
3.	Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years) (as per NCVET guidelines)	Educational Qualification: Graduate (Engineering/ Technology/ Computer Science) Industry & Training Experience: 4 years of industry experience in AIBDA. The full-time experience would include work, internship, and apprenticeship undertaken after regular graduation. Certification: "Lead Assessor" mapped to the Qualification Pack "MEP/Q2702" Minimum accepted score is 90% aggregate.
4.	Assessment Mode (Specify the assessment mode)	The assessment will consist of a blend of hands-on practical evaluations, viva-voce, and online proctored scenario-based multiple-choice questions ensuring a thorough evaluation of the individual's proficiency in learning outcomes, practical understanding, and real-world application of concepts.
5.	Tools and Equipment Required for Assessment	☒ Same as for training ☐ Yes ☐ No (details to be provided in Annexure-if it is different for Assessment)

Assessment Strategy

Assessment Process Overview

Batch Creation & Assessment Request:

Training Providers (TP) or Training Centers (TC), including any other authorized partner of Ministry/ Department create batches / push batches on the SIDH portal. Assessment requests are submitted through the SIDH portal or via email or other media as authorized from time to time. For NON-SIDH schemes, assessment requests are received electronically or through respective State Skill Mission portals. TP/TC initiates the assessment request through the InSDMS portal and processes the payment (where applicable).

Batch Alignment & Confirmation:

Upon payment confirmation, batches are assigned to the Assessment Agency based on factors like:

- Assessment readiness
- Availability of certified assessors for the specific job role
- Assessment capping to an assessment agency as prescribed from time to time for an AB
An email communication / prescribed mode communication is sent to TP/TC for confirmation of the assessment date, with IT-ITes SSC in the loop. Once confirmation is received, the Assessment Agency designates a TOA-certified assessor to conduct or facilitate the assessment.
- Batches are only formed when the Qualification is active.

Candidate Verification & Assessment Execution:

Candidate details are verified and documented at the beginning of the assessment by a certified assessor. A Quality Assurance (QA) mechanism is enforced, requiring an undertaking from the TC. Regular feedback is collected from TP/TC to ensure continuous improvement.

Evidence Collection & Validation:

Proctors or assessors capture date/time-stamped and geo-tagged photographs of the assessment location during the process. Attendance is also ensured offline. A PC-wise result analysis is conducted to refine assessment standards.

Monitoring & Compliance:

Batch monitoring follows established protocols, ensuring adherence to assessment guidelines. Sample based surprise visits are conducted at TC locations during both training and assessments to verify compliance. This structured approach ensures transparency, quality control, and validation throughout the assessment process.

Testing Environment:

- Check the Assessment location, date and time
- If the batch size is more than 30, then there should be 2 Assessors.
- Check that the allotted time to the candidates to complete Theory & Practical Assessment is correct.

Assessment Quality Assurance levels/Framework:

IT-ITeS SSC nasscom is responsible for the development and periodic review of the question bank developed for a specific job role. We publish an openly accessible sample /model question paper on our website for all stakeholders. The quality of the Question Bank created by the assessment designer is validated by a Subject matter experts on the following parameters:

- Appropriateness of the Question Bank in terms of facts, data and information.
- Checks for grammar, spellings, scripting and formatting.
- The information provided should be specific enough to remove any ambiguity in answers/solutions to the question.
- Relevance – Assessing the topic well w.r.t. the job role.
- Check if the difficulty level of each question is as per the matrix.
- Check if the images used in the question are clear and relevant.
- All variables, symbols and abbreviations used must be declared.
- The correct answer option should be unique, and the options should not be overlapping

References

Glossary

Term	Description
Key Learning Outcome	Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application).
Training Outcome	Training outcome is a statement of what a learner will know, understand and be able to do upon the completion of the training .
Terminal Outcome	Terminal outcome is a statement of what a learner will know, understand and be able to do upon the completion of a module . A set of terminal outcomes help to achieve the training outcome.
National Occupational Standard	National Occupational Standard specify the standard of performance an individual must achieve when carrying out a function in the workplace
Performance Criteria	Performance Criteria indicates what specific characteristics an individual should be able to demonstrate in order to achieve the learning outcomes
Persons With Disability	Persons with Disability are those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others.
Integrated Development Environment	An integrated development environment is a software application that provides comprehensive facilities to computer programmers for software development.
Natural Language Processing	Natural Language Processing or NLP is a field of Artificial Intelligence that gives the machines the ability to read, understand and derive meaning from human languages.

Acronyms and Abbreviations

Term	Description
QP	Qualification Pack
NSQF	National Skills Qualification Framework
NSQC	National Skills Qualification Committee
NOS	National Occupational Standards
SSC	Skill Sectors Councils
NASSCOM	National Association of Software & Service Companies
PwD	Persons with Disability
IDE	Integrated development environment
NLP	Natural Language Processing