Model Curriculum

QP Name: AI Database Administrator

QP Code: SSC/Q8109

QP Version: 4.0

NSQF Level: 6

Model Curriculum Version: 4.0

IT-ITeS Sector Skill Council || IT-ITeS Sector Skill Council, NASSCOM, Plot No - 7, 8, 9 & 10, 3rd Floor, Sector 126, Noida
Uttar Pradesh – 201303

Table of Contents

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-2015/2522.0100**
Minimum Educational Qualification and Experience	*** Relevant Field- AI/Computer Science/IT** **The relevant experience would include work, internship and apprenticeship undertaken post-completion of relevant educational qualification.** **** UG or diploma with courses related to Engg./ Science** **Completed 4 year UG**** **OR** **Completed 3 Year UG Degree ** with 1.5 years of relevant experience*** **OR** **Previous Relevant qualification of NSQF level 5.5 with 1.5 years of relevant experience***
Pre-Requisite License or Training	**NA**
Minimum Job Entry Age	**NA**
Last Reviewed On	**07 October 2025**
Next Review Date	**07 October 2028**
NSQC Approval Date	**07 October 2025**
QP Version	**4.0**
Model Curriculum Creation Date	**07 October 2025**
Model Curriculum Valid Up to Date	**07 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.

Compulsory:

- Define and explain key database concepts, terminology, and types (relational, NoSQL) and their applications in various industries.
- Develop efficient database designs using Entity-Relationship (ER) diagrams and principles of normalization. Successfully install and configure open-source Database Management Systems (DBMS) such as MySQL or PostgreSQL, creating new database instances.
- Construct and execute SQL commands using Data Definition Language (DDL) and Data Manipulation Language (DML) to create, modify, and query databases effectively.
- Implement constraints, indexes, stored procedures, and triggers to enhance data integrity, optimize performance, and automate database functions.
- Understand the importance of database validation for compliance (e.g., GDPR, HIPAA) and performance assessment. Create relevant compliance and performance metrics tailored to organizational needs.
- Safely execute database updates and deletions, implement archiving procedures for obsolete data, and manage data effectively throughout its lifecycle.
- Set up automated database maintenance tasks, utilize monitoring tools to track performance metrics, and conduct load and stress tests to evaluate database resilience and stability.
- Define and administer user roles and permissions within databases, applying best practices for security through role-based access control (RBAC). Implement encryption standards for data protection.
- Identify and troubleshoot common database issues, including performance problems and data integrity concerns. Develop and implement remediation plans to optimize database efficiency.
- Create clear and comprehensive documentation of database structures, processes, and compliance requirements, utilizing appropriate tools for effective communication and sharing.
- Work collaboratively with peers in group activities, discussions, and presentations, enhancing collective understanding and fostering problem-solving skills.
- Apply the knowledge and skills gained through practical scenarios, preparing participants for real-world responsibilities related to database creation, management, and administration across various sectors.

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/N8115 – Create new databases NSQF Level 6	**40:00**	**65:00**	**15:00**	**00:00**	**120:00**
Module 1: Data sources & databases	20:00	32:00	07:00	00:00	59:00
Module 2: Database from concept to creation	20:00	33:00	08:00	00:00	61:00
SSC/N8116 – Maintain existing databases NSQF Level 6	**34:00**	**41:00**	**15:00**	**00:00**	**90:00**
Module 3: Data validation and compliance	16:00	19:00	07:00	00:00	42:00
Module 4: Automated maintenance & monitoring	18:00	22:00	08:00	00:00	48:00
SSC/N8117 – Manage database access and configuration NSQF Level 6	**27:00**	**33:00**	**30:00**	**00:00**	**90:00**
Module 5: User Access Management and Security Configuration	15:00	16:00	15:00	00:00	46:00
Module 6: Monitoring, Reporting, and Troubleshooting	12:00	17:00	15:00	00:00	44:00
SSC/N8118 – Manage computing cluster administration NSQF Level 6	**30:00**	**60:00**	**30:00**	**00:00**	**120:00**
Module 7: Manage Computing Cluster Administration	30:00	60:00	30:00	00:00	120:00
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 8: Introduction to Employability Skills	00:30	01:00	00:00	00:00	01.50
Module 9: Constitutional values – Citizenship	00:30	01:00	00:00	00:00	01.50
Module 10: Becoming a Professional in the 21st Century	01:00	01:30	00:00	00:00	02.50
Module 11: Basic English Skills	04:00	06:00	00:00	00:00	10.00

Module 12: Career Development & Goal Setting	01:00	01:00	00:00	00:00	02.00
Module 13: Communication Skills	02:00	03:00	00:00	00:00	05.00
Module 14: Diversity & Inclusion	01:00	01:30	00:00	00:00	02.50
Module 15: Financial and Legal Literacy	02:00	03:00	00:00	00:00	05.00
Module 16: Essential Digital Skills	04:00	06:00	00:00	00:00	10.00
Module 17: Entrepreneurship	03:00	04:00	00:00	00:00	07.00
Module 18: Customer Service	02:00	03:00	00:00	00:00	05.00
Module 19: Getting ready for apprenticeship & Jobs	03:00	05:00	00:00	00:00	08.00
Total Duration	**155:00**	**235:00**	**90:00**	**00:00**	**480:00**

Module Details

Module 1: Data sources and databases

Mapped to SSC/N8115

Terminal Outcomes:

- Define and explain fundamental database concepts and terminology, including types of databases (relational, NoSQL) and their use cases.
- Develop efficient database designs using Entity-Relationship (ER) diagrams and apply principles of normalization to organize data effectively.
- Successfully install an open-source Database Management System (DBMS) such as MySQL or PostgreSQL and set up a new database instance.
- Write and execute various SQL commands, demonstrating proficiency in Data Definition Language (DDL) and Data Manipulation Language (DML) to create, modify, and query databases.
- Implement constraints, indexes, stored procedures, and triggers to improve data integrity, optimize performance, and automate database functions.
- Recognize and apply best practices in database design and management, ensuring security, performance, and scalability.
- Create and maintain clear and comprehensive documentation for database structure, processes, and usage guidelines in a professional format.
- Identify and troubleshoot common database issues, including query performance problems and data integrity concerns.
- Work collaboratively with peers during group activities, discussions, and presentations to enhance collective understanding and problem-solving skills.
- Apply knowledge gained in practical scenarios, preparing participants for real-world responsibilities related to database creation and management in various sectors.

Duration (In Hours): 20:00	**Duration (In Hours): 32:00 (+07:00 OJT)**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Identify relevant internal data sources to leverage such as data warehouses, web servers, structured / unstructured flat files • Explain the concept of database Concepts: Definition, importance, and types (Relational, NoSQL). • Explain different databases based on the defined data segmentation, schema, querying requirements, storage, availability and speed requirements • Discuss the database applications in various industries.	• Demonstrate the process of installing and creating new databases • Create a simple visual representation of their selected use case. • Create an ER diagram for a sample application (e.g., library system). • Set up a local database environment. • Conduct an activity to use Docker to configure MySQL/PostgreSQL and create a test database. • Write SQL statements for creating tables (e.g., users, products) and populate them with sample data.

• Discuss the principles of database design: schema design and normalization. • Introduction to Entity-Relationship (ER) modelling. • Introduction to Database Management Systems (DBMS): Focus on open-source options (MySQL, PostgreSQL) • Introduction to SQL: Focus on Data Definition Language (DDL) and Data Manipulation Language (DML). • Discuss constraints, relationships, indexes, stored procedures, and triggers. • Discuss best practices for database design and maintenance. • Importance of documentation and maintenance.	• Use SELECT statements to explore and query the database. • Implement constraints and indexes in the created tables. • Create a simple stored procedure and a trigger for automating tasks. • Write and finalize documentation on database schema using Markdown or a similar tool.
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 (Open Source)	
• DBMS: MySQL, PostgreSQL • ER Diagram Tools: diagrams.net, Lucidchart • Documentation: Markdown editors (e.g., Typora, Dillinger) • Integrated Development Environment: DBeaver, pgAdmin (for PostgreSQL)	

Module 2: Database from concept to implementation

Mapped to SSC/N8115

Terminal Outcomes:

- Define Key databases concepts and terminology, including type of databases (relational,No SQL) and their applications
- Create effective database designs using ER modelling and apply normalization principles ot organize data.
- Successfully install and configure an open-source Database Management System (DBMS) such as MySQL or PostgreSQL, and create a new database instance.
- Construct and execute SQL commands for Data Definition Language (DDL) and Data Manipulation Language (DML), including creating tables, inserting data, and querying relationships.
- Utilize database constraints, indexes, stored procedures, and triggers to enhance data integrity, performance, and automation in the database.
- Identify and apply best practices for database design and management to ensure scalability, security, and reliability.
- Create clear and structured documentation for database schemas and processes, utilizing Markdown or similar tools for effective communication and sharing.
- Diagnose and resolve basic issues related to database setups, SQL queries, and performance optimization.

- Collaborate effectively with peers in group discussions, presentations, and peer reviews to foster a shared understanding of database concepts and practices.
- Apply learned skills and concepts to real-world scenarios, preparing participants for roles that involve database design and management in various industries.

Duration (In Hours): 20:00	**Duration (In Hours): 33:00 (+08:00 OJT)**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss the concepts of databases, types, and importance in the tech stack. • Explain popular open-source DBMS. • Provide introduction of SQL, DDL, and DML. • Discuss constraints, indexes, stored procedures, and their significance. • Explain the best practices for design, performance and data integrity	• Create an ER diagram for a given scenario. • Install DBMS using Docker/MySQL/PostgreSQL. • Create, configure, and test a new database instance. • Execute SQL commands to create tables and insert data. • Add constraints/indexes and create triggers, providing a real-world context. • Develop documentation; include schema, queries, and notes.
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 (Open Source)	
• DBMS: MySQL, PostgreSQL • ER Diagram Tools: diagrams.net, Lucidchart • Documentation: Markdown editors (e.g., Typora, Dillinger) • Integrated Development Environment: DBeaver, pgAdmin (for PostgreSQL)	

Module 3: Data validation and compliance

Mapped to SSC/N8116

Terminal Outcomes:

- Participants will comprehend the importance of database validation for compliance and performance assessment in various regulatory contexts (e.g., GDPR, HIPAA).
- Participants will develop skills to engage effectively with stakeholders to gather feedback on database compliance and performance metrics.
- Participants will be able to create relevant compliance and performance metrics tailored to organizational needs.
- Participants will learn to execute database updates and deletions safely while minimizing the risk of data loss.
- Participants will understand diverse data archiving methodologies and be able to implement procedures effectively for managing obsolete data.
- Participants will create comprehensive documentation outlining validation strategies, compliance requirements, and data management processes for internal and external stakeholders.

Duration (In Hours): 16:00	Duration (In Hours): 19:00 (+07:00)
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss the importance of database validation in organizational compliance and performance assessments. • Explain the types of compliance (regulatory, operational, security) • Review regulatory frameworks relevant to database management (e.g., GDPR, HIPAA). • Discuss the guidelines for updating and deleting data (best practices, risks). • Data lifecycle management and archiving methods (e.g., time-based, event-based). • Engaging stakeholders for regular compliance checks and feedback loops. • Best practices for documenting compliance validation processes.	• Discuss with the team and draft compliance requirements • Formulate specific metrics (e.g., response time, data accuracy, accessibility) that align with organizational goals. • Execute SQL commands to update existing records in a sample database. • Implement a procedure to archive obsolete data by creating an archive table and moving data based on specified criteria. Example Process: ➢ Identify records older than two years. ➢ Move these records to an archived_users table. • Present updated data management logs to participants for feedback on compliance and archive procedures. • Create comprehensive documentation outlining validation processes, compliance metrics, and data archiving methodologies.
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 (Open Source)	
• DBMS: MySQL, PostgreSQL • Backup Tools: pgAdmin, MySQL Workbench • Monitoring Tools: Zabbix, Prometheus • Load Testing Tools: Apache JMeter, Locust • Documentation: Markdown editors, Google Docs	

Module 4: Automated Maintenance and Monitoring

Mapped to SSC/N8116

Terminal Outcomes:

- Gain expertise in setting up automated database maintenance tasks, ensuring seamless backups and optimizations.
- Participants will be skilled in installing, configuring, and utilizing monitoring tools to track database performance metrics effectively.
- Understand how to execute load and stress tests to evaluate database stability and performance under high usage conditions.

- Learn to create and analyze performance reports that summarize key metrics and insights derived from monitoring and testing.
- Participants will be equipped to monitor ongoing data storage consumption and forecast future capacity needs based on usage patterns.
- Develop comprehensive disaster recovery plans and conduct simulated testing to ensure preparedness for data recovery in case of emergencies.
- Gain proficiency in documenting maintenance procedures, monitoring setups, testing results, and disaster recovery strategies to facilitate knowledge sharing and compliance.

Duration (In Hours): 18:00	**Duration (In Hours): 22:00 (+08:00 OJT)**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the automated maintenance tasks: backups, index optimization, updates. • Discuss the significance of proactive monitoring in maintaining database health. • Explain the importance of monitoring database performance and the metrics involved (e.g., CPU usage, query response times, disk I/O). • Explain the overview of monitoring tools (e.g., Zabbix, Prometheus) and their features. • Explain load/stress testing and its significance in understanding database limits. • Covers the overview of user acceptance testing (UAT) methodologies. • Discuss the Importance of reporting for database performance and resource consumption. • Explain data forecasting techniques and capacity planning essentials. • Explain disaster recovery strategies for databases and best practices for ensuring data recovery. • Discuss the importance of regular testing of disaster recovery plans.	• Create a scheduled backup script using cron jobs for MySQL or PostgreSQL. • Develop and execute scripts that automatically rebuild or reorganize indexes on tables during low-usage periods. • Install and configure Zabbix or Prometheus as a monitoring solution for a sample database. • Configure key performance indicators (KPIs) to track relevant metrics. • Design custom dashboards to visualize database performance metrics and set up alerting mechanisms for thresholds (e.g., response time > 2 seconds). • simulate load on a database by executing multiple concurrent queries. • Collect data on how the database handles the load (response times, error rates). • Develop a UAT plan, including the objectives and criteria for success. • Define user scenarios and engage test users for feedback on database performance under simulated load conditions. • Create automated reports that summarize database performance metrics (using SQL queries) based on previous monitoring data and load tests. • Use SQL scripts to analyze current data storage usage and predict future capacity needs, developing strategies for scaling storage as necessary. • Create a disaster recovery plan that includes data backup strategies, restoration procedures, and roles in event of a disaster. • Simulate a disaster recovery scenario to execute a restoration from a backup.

	Document the results and identify areas of improvement.
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 (Open Source)	
• DBMS: MySQL, PostgreSQL • Backup Tools: pgAdmin, MySQL Workbench • Monitoring Tools: Zabbix, Prometheus • Load Testing Tools: Apache JMeter, Locust • Documentation: Markdown editors, Google Docs	

Module 5: User Access Management and Security Configuration

Mapped to SSC/N8117

Terminal Outcomes:

- Define and implement user roles and permissions in a database environment, ensuring proper access control.
- Acquire the skills to test and validate access rules to ensure they function as intended to protect sensitive data.
- Comprehend various encryption standards (e.g., AES, RSA) and be able to define and implement appropriate encryption policies for data protection.
- Effectively implement encryption for data at rest and data in transit, ensuring the security of sensitive information.
- Learn to conduct load and stress testing on a database to evaluate its performance and resilience against potential Distributed Denial of Service (DDoS) attacks.
- Develop the ability to analyze and interpret the results of load tests to assess the capacity and performance of the database under high load conditions.

Duration (In Hours): 15:00	**Duration (In Hours): 16:00 (15:00 OJT)**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss the importance of user roles and permissions in database security. • Explain role-based and attribute-based access control models. • Explain the techniques for defining and implementing access rules. • Discuss the importance of data security through encryption. • Explain encryption standards such as AES and RSA. • Discuss data at rest versus data in transit. • Elaborate load/stress testing and its significance in preventing DDoS attacks. • Explain the database scalability and performance under heavy load.	• Draft user roles and permissions for various access levels in a sample database (e.g., admin, read-only). • Implement user access rules using SQL GRANT and REVOKE commands in PostgreSQL or MySQL. • Outline encryption policies to protect sensitive data within the database. • Encrypt sensitive data columns. • Discuss using SSL/TLS for encrypting data in transit. • Simulate user load on the database and monitor the impact on performance. • Review JMeter results to determine the database's performance metrics and assess its resilience against potential DDoS attacks.
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 (Open Source)	
• DBMS: MySQL, PostgreSQL • Monitoring Tools: Prometheus, Grafana • Load Testing Tools: Apache JMeter • Reporting and Documentation: SQL databases, • Presentation tools (Google Slides, PowerPoint)	

Module 6: Monitoring, Reporting, and Troubleshooting

Mapped to SSC/N8117

Terminal Outcomes:

- Gain expertise in using monitoring tools (e.g., Prometheus, Grafana) to track database performance metrics, workloads, and resource consumption.
- Create and present detailed reports on database utilization, availability, and performance metrics that meet stakeholder requirements.
- Diagnose common utilization and performance issues, utilizing appropriate tools and techniques to identify root causes.
- Acquire the skills to develop and implement remediation plans to address identified performance issues and optimize database efficiency.
- Understand the principles of disaster recovery and be able to create comprehensive plans addressing backup and restoration procedures.
- Execute and document disaster recovery tests to ensure readiness for real-world scenarios, ensuring business continuity.

Duration (In Hours): 12:00	**Duration (In Hours): 17:00 (+15:00)**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Overview of database monitoring essentials (performance metrics, logs). • Importance of workload forecasting and resource allocation. • Importance of reporting performance metrics to stakeholders. • Key performance indicators (KPIs) for database health. • Common database performance issues and troubleshooting techniques. • Tools and methodologies for diagnosing database problems (e.g., query optimization, resource contention). • Overview of disaster recovery strategies, including backup types, recovery point objectives (RPO), and recovery time objectives (RTO). • Importance of availability strategies in database management.	• Install and configure tools like Prometheus and Grafana to monitor database performance and resource utilization. • Use SQL queries to monitor the ongoing workloads and compute resource consumption in a sample database. • Create a reporting template to capture database utilization, availability, and performance metrics using data from monitoring tools. • Demonstrate how the metrics inform database administration decisions. • Review real-world scenarios of performance degradation in databases and use SQL queries to identify bottlenecks. • Diagnostic Queries: Check for long-running queries and blocked processes. • Create action plans based on the diagnosed issues, focusing on performance optimization, such as creating indexes and query rewriting. • Develop a comprehensive disaster recovery plan for a hypothetical database environment, including backup schedules and restoration procedures.

	• Conduct a simulated recovery from a backup to restore a database, documenting the process and identifying any potential improvements.
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 (Open Source)	
• DBMS: MySQL, PostgreSQL • Monitoring Tools: Prometheus, Grafana • Load Testing Tools: Apache JMeter • Reporting and Documentation: SQL databases, • Presentation tools (Google Slides, PowerPoint)	

Module 7: Manage computing cluster administration

Mapped to SSC/N8118

Terminal Outcomes:

- Grasp the fundamental concepts, architectures, and types of computing clusters, enabling them to identify suitable cluster solutions for various applications.
- Successfully deploy and configure a multi-node computing cluster using tools like Kubernetes, implementing settings for high availability and redundancy.
- Understand and validate redundancy and failover strategies to ensure continuous operation of the computing cluster in the event of node failures.
- Implement regular maintenance procedures, including automated software updates and health checks, to keep the cluster operational and efficient.
- Evaluate current and future resource requirements through capacity planning techniques, allowing them to effectively scale the cluster based on anticipated growth.
- Set up monitoring tools (e.g., Prometheus, Grafana) to track connectivity, performance metrics, and resource utilization of the cluster in real-time.
- Analyze collected data using advanced analytics tools (e.g., ELK Stack) to identify inefficiencies and recommend optimizations to enhance cluster performance.
- Effectively define and administer user roles and permissions within clusters, applying best practices for security through role-based access control (RBAC).
- Create and validate documentation that outlines cluster configurations, operational procedures, user roles, and maintenance schedules to support operational continuity..

Duration (In Hours): 30:00	**Duration (In Hours): 60:00 (+30:00)**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Overview of computing clusters: Definition, purpose, types (e.g., high-performance computing (HPC), load balancing).	• Create a simple two-node cluster using an open-source orchestration tool (e.g., Kubernetes) on a cloud platform (e.g., Google Cloud Platform, AWS Educate).

• Understanding cluster architecture and essential components. • Steps to deploy clusters: OS installation, configuration, and integration with other services. • Redundancy and failover strategies within cluster management. • Best practices for ongoing cluster maintenance, including software updates, health checks, and monitoring. • Importance of resource utilization and performance monitoring. • Capacity planning: methodologies and tools for forecasting resource needs. • Identifying workload patterns and strategies for scalability. • Strategies for monitoring cluster connectivity and performance. • Utilizing advanced analytics and machine learning for predictive insights. • Best practices for managing user access and permissions in clusters. • Role-based access control (RBAC) and its importance in security. • The importance of documentation in cluster management for operational continuity and compliance. • Components of effective documentation, including architecture diagrams, setup procedures, monitoring guidelines, and maintenance schedules.	• Deploy a multi-node cluster with high availability settings. • Simulate a node failure and demonstrate the failover process, ensuring continued operation with backup nodes. • Create scripts for automated software updates and health checks in their cluster. • Set up tools like Prometheus and Grafana to track cluster performance and resource utilization. • Analyze existing usage metrics from the cluster, applying techniques to project future scaling needs. • Demonstrate the process of scaling the cluster up or down based on capacity planning forecasts. • Set up ELK Stack (Elasticsearch, Logstash, Kibana) for in-depth performance tracking and log management. • Analyze the data collected and generate insights to identify inefficiencies in cluster performance. • Create a user role matrix outlining permissions for various access levels within the cluster (e.g., read-only, write access, admin). • Use Kubernetes RBAC to set up permissions based on the predefined user roles within the cluster. Test the access restrictions to ensure proper functionality. • Develop documentation templates that cover key aspects of their cluster setup, including configuration settings, user roles, maintenance procedures, and disaster recovery plans.
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 (Open Source)	
• Cluster Management: Kubernetes, Apache Mesos • Cloud Platforms: Google Cloud Platform, AWS Educate • Monitoring Tools: Prometheus, Grafana, ELK Stack (Elasticsearch, Logstash, Kibana) • Documentation: Markdown editors, Google Docs, Lucidchart (for diagrams)	

Module 8: Introduction to Employability Skills

Mapped to 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 9: Constitutional values - Citizenship

Mapped to 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 10: Becoming a Professional in the 21st Century

Mapped to 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 11: Basic English Skills

Mapped to 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 12: Career Development and Goal Setting

Mapped to 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 13: Communication skills

Mapped to 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 14: Diversity and Inclusion

Mapped to 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 15: Financial and Digital Literacy

Mapped to 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 16: Essential Digital Skills

Mapped to 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 17: Entrepreneurship

Mapped to 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 18: Customer Service

Mapped to 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 19: Getting Ready for Apprenticeship and Jobs

Mapped to 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

Recommended Supplemental Readings

The learning modules covered in the Model Curriculum for AI-Database Administrator are designed to meet the expected outcomes as per the QP. While the modules aligned to NOS are focused on technical/ behavioral competencies, bridge modules cover the prerequisite/ preparatory topics that are indispensable to complete the course. However, to provide additional QP specific knowledge to the learners, the following supplemental readings on related topics are recommended. These readings will equip the learners with an understanding of advanced or ancillary concepts to take up more complex tasks as listed in the QP.

QP	Recommended Supplemental Reading
SSC/Q8109: AI Database Administrator	1) Database Management Concepts 2) Database Security

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
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