Model Curriculum

QP Name: Automotive Manufacturing Data Science Specialist

QP Code: ASC/Q6417

QP Version: 1.0

NSQF Level: 6

Model Curriculum Version: 1.0

Automotive Skills Development Council | 153, Gr Floor, Okhla Industrial Area, Phase – III, Leela Building, New Delhi – 110020

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Training Parameters

Sector	Automotive
Sub-Sector	Manufacturing
Occupation	Production Engineering
Country	India
NSQF Level	6
Aligned to NCO/ISCO/ISIC Code	NCO-2015/2120.0300
Minimum Educational Qualification and Experience	B.E./B.Tech in the relevant field with 1 Year of relevant experience OR Pursuing 2nd year of M.E./M.Tech in the relevant field and continuous education OR Certificate-NSQF (Electric Vehicle Product Design Engineer/ Automotive Prototype Manufacturing Lead Technician Level 5) with 3 Years of relevant experience
Pre-Requisite License or Training	NA
Minimum Job Entry Age	22 years
Last Reviewed On	23-06-2023
Next Review Date	23-06-2026
NSQC Approval Date	23-06-2023
QP Version	1.0
Model Curriculum Creation Date	23-06-2023
Model Curriculum Valid Up to Date	23-06-2026
Model Curriculum Version	1.0
Minimum Duration of the Course	660 Hours
Maximum Duration of the Course	660 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.

- Perform steps for data extraction from the Industrial robots, Automation systems, Machines & other Manufacturing entities.
- Perform steps to use statistical data analysis software for data preparation and visualization.
- Perform steps to develop predictive and analytics solutions project with its business interpretation in decision making.
- Implement safety practices.
- Use resources optimally to ensure less wastage and maximum conservation.
- Communicate effectively and develop interpersonal skills.

Compulsory Modules

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

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
Bridge Module					
Module 1: Introduction to the role of an Automotive Manufacturing Data Science Specialist	5:00	0:00			5:00
ASC/N9810: Manage work and resources (Manufacturing) **NOS Version No. – 1.0** **NSQF Level – 5**	**15:00**	**40:00**			**55:00**
Module 2: Manage work and resources according to safety and conservation standards	15:00	40:00			55:00
ASC/N6449 – Manage data extraction and collection in automotive manufacturing entities **NOS Version No. –1.0** **NSQF Level - 6**	**20:00**	**40:00**			**60:00**
Module 3: Data extraction from the Industrial robots, Automation systems, Machines & other Manufacturing entities	20:00	40:00			60:00
ASC/N6450– Prepare and analyse data by using analytical tools	**25:00**	**35:00**			**60:00**

NOS Version No. –1.0 NSQF Level – 6					
Module 4: Use statistical data analysis software for data preparation and visualization	25:00	35:00			60:00
ASC/N6443 – Develop solutions for complex business problems NOS Version No. –1.0 NSQF Level – 6	**25:00**	**35:00**			**60:00**
Module 5: Development of predictive and analytics solutions	25:00	35:00			60:00
ASC/N6451 – Analyse assembly line data in automotive manufacturing entity NOS Version No. –1.0 NSQF Level – 6	**25:00**	**35:00**			**60:00**
Module 6: Analyse assembly line data in automotive manufacturing entity	25:00	35:00			60:00
DGT/VSQ/N0104-Employability Skills (120 hours) NOS Version No. – 1.0 NSQF Level – 7	**48:00**	**72:00**			**120:00**
Module 7: Introduction to Employability Skills	1.5:00	1.5:00			3:00
Module 8: Constitutional values - Citizenship	1:00	2:00			3:00
Module 9: Becoming a Professional in the 21st Century	2:00	3:00			5:00
Module 10: Basic English Skills	8:00	12:00			20:00
Module 11: Career Development & Goal Setting	1.5:00	2.5:00			4:00
Module 12: Communication Skills	4:00	6:00			10:00
Module 13: Diversity & Inclusion	2:00	3:00			5:00
Module 14: Financial and Legal Literacy	4:00	6:00			10:00
Module 15: Essential Digital Skills	8:00	12:00			20:00
Module 16: Entrepreneurship	6:00	9:00			15:00
Module 17: Customer Service	4:00	6:00			10:00
Module 18: Getting ready for apprenticeship & Jobs	6:00	9:00			15:00
OJT			**240:00**		**240:00**
OJT			240:00		240:00
Total Duration	**168:00**	**252:00**	**240:00**		**660:00**

Module Details

Module 1: Introduction to the role of an Automotive Manufacturing Data Science Specialist

Bridge module

Terminal Outcomes:

- Discuss the role and responsibilities of an Automotive Manufacturing Data Science Specialist.

Duration: *<05:00>*	**Duration**: *<00:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• List the role and responsibilities of an Automotive Manufacturing Data Science Specialist. • Discuss the job opportunities for an Automotive Manufacturing Data Science Specialist in the automobile industry. • Explain about Indian automobile manufacturing market. • List various automobile Original Equipment Manufacturers (OEMs) and different products/ models manufactured by them. • Discuss dealership standards and procedures followed in the company.	
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	

Module 2: Manage work and resources according to safety and conservation standards

Mapped to ASC/N9810, v1.0

Terminal Outcomes:

- Employ appropriate ways to maintain safe and secure working environment
- Apply material and energy conservation practices at the workplace.

Duration: *<15:00>*	**Duration**: *<40:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss organisational procedures for health, safety and security and individual role and responsibilities related to the same. • List the potential workplace related risks, threats and hazards, their causes and preventions. • List personal protective equipment like safety gloves, glasses, shoes and mask used at the workplace. • List various types of fire extinguisher. • Identify various safety boards/ signs placed on the shop floor. • Explain 5S standards, procedures and policies followed at workplace. • Discuss organisational procedures to deal with emergencies and accidents at the workplace and importance of following them. • State the importance of conducting safety drills or training sessions. • Explain the process of filling daily check sheet for reporting to the concerned authorities about improvements done and risks identified. • Discuss how and when to report about potential hazards identified in the workplace and limits of responsibility for dealing with them. • Outline the importance of keeping workplace, equipment, restrooms etc. clean and sanitised. • Explain the importance of following hygiene and sanitation regulations developed by organisation at the workplace. • Discuss the importance of maintaining the availability of running water, hand wash and alcohol-based sanitizers at the	• Apply appropriate ways to implement safety practices to ensure safety of people at the workplace. • Display the correct way of wearing and disposing PPE. • Demonstrate the use of fire extinguisher. • Demonstrate how to provide first aid procedure in case of emergencies. • Demonstrate how to evacuate the workplace in case of an emergency. • Employ various techniques for checking malfunctions in the machines with the support of maintenance team and as per Standard Operating Procedures (SOP). • Demonstrate to arrange tools/ equipment/ fasteners/ spare parts into proper trays, cabinets, lockers as mentioned in the 5S guidelines/work instructions. • Apply appropriate ways to organise safety drills or training sessions for others on the identified risks and safety practices. • Prepare a report about the health, safety and security breaches. • Apply appropriate ways to check that workplace, equipment, restrooms etc. are cleaned and sanitised. • Role play a situation to brief the team about the hygiene and sanitation regulations developed by organisation. • Demonstrate the correct way of washing hands using soap and water and alcohol-based hand rubs. • Apply appropriate methods to support the employees to cope with stress, anxiety etc. • Demonstrate proper waste collection and disposal mechanism depending upon types of waste.

workplace. • Discuss the significance of conforming to basic hygiene practices such as washing hands, using alcohol based hand sanitizers or soap. • Recall ways of reporting advanced hygiene and sanitation issues to the concerned authorities. • Elucidate various stress and anxiety management techniques. • Discuss the significance of greening. • Classify different categories of waste for the purpose of segregation. • Differentiate between recyclable and non-recyclable waste. • Discuss various methods of waste collection and disposal. • List the various materials used at the workplace. • Explain organisational recommended norms for storage of tools, equipment and material. • Discuss the importance of efficient utilisation of material and water. • Explain basics of electricity and prevalent energy efficient devices. • Explain the processes to optimize usage of material and energy/electricity. • Enlist common practices for conserving electricity at workplace.	• Perform the steps involved in storage of tools, equipment and material after completion of work. • Employ appropriate ways to resolve malfunctioning (fumes/ sparks/ emission/ vibration/ noise) and lapse in maintenance of equipment as per requirements. • Perform the steps to prepare a sample material and energy audit reports. • Employ practices for efficient utilization of material and energy/electricity.
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	
• Housekeeping material: Cleaning agents, cleaning cloth, waste container, dust pan and brush set, liquid soap, hand towel, fire extinguisher • Safety gears: Safety shoes, ear plug, goggles, gloves, helmet, first-aid kit	

Module 3: Data extraction from the Industrial robots, Automation systems, Machines & other Manufacturing entities

Mapped to ASC/N6449, v1.0

Terminal Outcomes:

- Perform the steps of extracting data from the Industrial robots, Automation systems, Machines & other Manufacturing entities.

Duration: *<20:00>*	**Duration**: *<40:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss organizational policies and procedures for documenting databases architectures and backup mechanisms • Describe designing and developing the database architecture and pipelines for the solution • Discuss the range of standard platforms and tools available and how to use them • List database connectors and application connectors for application-cloud communications • Discuss updated internal and external cybersecurity regulations • Describe the impacts of network on the environment and human health • List ETL tools like Talend, SQL Server Integration Services (SSIS), etc. • Describe basics of SQL • Describe Sales & Service core Processes • Describe process KPI of Automotive Sales, Service & Spare Parts	• Apply appropriate ways to evaluate the requirements of the business questions to be catered with either visualization platforms or analytics and predictive modelling solutions. • Show how to design data architecture for data extraction using connectors and platforms from various departments. • Apply appropriate ways to identify the people required to execute the business analytics project requirements • Show how to plan and prepare project layout where it should defend the choice of technology and its cost. • Show how to prepare an outline of the project execution taking the business questions into consideration. • Apply appropriate ways to identify appropriate data attributes to be extracted from various departments. • Show how to prepare the timeline and resource requirements. • Demonstrate use of project tracking tools and task prioritization for all team members. • Apply appropriate ways to select the data integration platform with the capabilities like- data transformation, application connectors, file processing, routing, orchestration, event handling, stream processing, API management, no-vendor lock-in. • Apply appropriate ways to create and monitor an end-to-end data flow using ETL (Extract-Transform-Load) tool using different connectors for different types of data sources. • Show how to design and create a data warehouse for easy consumption of data

	points for data analysts. • Show how to develop data pipelines using connectors to populate the data in the data warehouse
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	
simulation tools, software testing tools, hand tools, measuring instruments, gauges	

Module 4: Use statistical data analysis software for data preparation and visualization

Mapped to ASC/N6450, v1.0

Terminal Outcomes:

- Perform steps to use statistical data analysis software for data preparation and visualization

Duration: *<25:00>*	**Duration**: *<35:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe product portfolio of organization • Describe company manufacturing processes. • Discuss Standard Operation Procedures (SOP) recommended by manufacturer for using equipment / machinery in use. • Describe Descriptive and Inferential statistics • Describe types of data wrangling and data cleaning methods • Discuss documentation of the organization for the metadata creation. • Describe Python open-source libraries like SciPy, Pandas, Matplotlib, SciKit-Learn, etc. • Describe Open-source web application that you can use to create and share documents that contain live code, equations, visualizations, and text like Jupyter Notebook, Jupyter Lab, etc. • Describe Python based platforms like Anaconda	• Show how to define a business problem and define a business goal • Apply appropriate ways to select the relevant source of data to define business goal. • Apply appropriate ways to validate the criterion in the business problem with domain person • Show how to create a set of metadata for the selected dataset • Apply appropriate ways to identify the attributes or columns in the datasets which are most significant from analysis perspective • Perform exploratory data analysis to check for missing or duplicate data. • Perform descriptive statistics on the data • Perform inferential statistics on the data • Apply appropriate ways to find correlation amongst the selected attributes of the data .and plot their heatmap. List down highly correlated attributes.
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	
testing tools, simulation tools, software testing tools, hand tools, measuring tools, measuring instruments, gauges	

Module 5: Development of predictive and analytics solutions

Mapped to ASC/N6443, v1.0

Terminal Outcomes:

- Perform steps to develop predictive and analytics solutions project with its business interpretation

Duration: *<25:00>*	**Duration**: *<35:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe different types of visualizations charts Bar Graph, Line Graph, Stacked Bar Graph, Pie Chart, Scatter Plot Chart, etc. • Describe different types and categories of data variables qualitative, quantitative, nominal, ordinal, discrete, continuous, etc. • List different types of visualizations tools like Microsoft PowerBI Desktop, Tableau Public • Describe local machine server architecture	• Show how to install relevant libraries and tools for model making • Show how to split and prepare the dataset into training, validation and testing sets. • Show how to configure hyperparameters for the selected model, establish the training pipelines and execute the training phase. • Show how to store the model and network parameters to be used in the testing phase. • Apply appropriate ways to prevent underfitting and overfitting of the model. • Apply appropriate ways to solve the imbalanced dataset problem when the samples from minority class are very few. • Apply appropriate ways to evaluate the training performance of the machine learning model for training and validation accuracy. • Show how to test the models with testing datasets • Apply appropriate ways to ensure the inference time per sample is as per the business requirement • Apply appropriate ways to evaluate the testing performance of the machine learning model for testing accuracy • Show how to develop a front-end application to fetch inputs from the user and consume developed model for inference • Apply appropriate ways to verify the production performance of the machine learning model • Apply appropriate ways to give feedback on the wrong predictions back to the training phase and retrain the machine learning model
Classroom Aids:	

Whiteboard, marker pen, projector
Tools, Equipment and Other Requirements
Diagnostic tools, testing tools, simulation tools, software testing tools, hand tools, measuring tools, measuring instruments, gauges

Module 6: Analyse assembly line data in automotive manufacturing entity

Mapped to ASC/N6451, v1.0

Terminal Outcomes:

- Perform steps to analyse assembly line data in automotive manufacturing entity.

Duration: *<25:00>*	**Duration**: *<35:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe organizational policies and procedures for documenting network designs and fall-back mechanisms • Describe different types of visualizations charts Bar Graph, Line Graph, Stacked Bar Graph, Pie Chart, Scatter Plot Chart, etc. • Describe different types and categories of data variables qualitative, quantitative, nominal, ordinal, discrete, continuous, etc. • List different types of visualizations tools like Microsoft Power BI Desktop, Tableau Public • Describe local machine server architecture • Describe Python based on tools like Anaconda, Jupyter, VS Code, etc.	• Show how to create demand forecast of the project. • Apply appropriate ways to analyse safety and quality data to reduce risk in assembly line • Apply appropriate ways to conduct predictive health maintenance of assembly line machines • Apply appropriate ways to verify sensor level data sources in assembly line • Apply appropriate ways to validate the data which needs expert analysis • Show how to deploy project on the local server or cloud • Apply appropriate ways to monitor and verify the compatibility of dashboard on different devices • Apply appropriate ways to monitor the alert system in real time dashboard as per requirement
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	
Python based on tools like Anaconda, Jupyter, VS Code, etc.	

Module 7: Introduction to Employability Skills

Mapped to DGT/VSQ/N0104

Terminal Outcomes:

- Discuss about Employability Skills in meeting the job requirements

Duration: *<1.5:00>*	**Duration**: *<1.5:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Outline the importance of Employability Skills for the current job market and future of work	• List different learning and employability related GOI and private portals and their usage • Research and prepare a note on different industries, trends, required skills and the available opportunities
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	
NA	

Module 8: Constitutional values - Citizenship

Mapped to DGT/VSQ/N0104

Terminal Outcomes:

- Discuss about constitutional values to be followed to become a responsible citizen

Duration: *<1:00>*	**Duration**: *<2:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain constitutional values, civic rights, duties, citizenship, responsibility towards society etc. that are required to be followed to become a responsible citizen.	• Practice different environmentally sustainable practices
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	
NA	

Module 9: Becoming a Professional in the 21st Century

Mapped to DGT/VSQ/N0104

Terminal Outcomes:

- Demonstrate professional skills required in 21st century

Duration: *<2:00>*	**Duration**: *<3:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss 21st century skills required for employment	• Highlight the importance of practicing 21st century skills like Self-Awareness, Behavior 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 • Create a pathway for adopting a continuous learning mindset for personal and professional development
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	
NA	

Module 10: Basic English Skills

Mapped to DGT/VSQ/N0104

Terminal Outcomes:

- Practice basic English speaking.

Duration: *<8:00>*	**Duration**: *<12:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe basic communication skills • Discuss ways to read and interpret text written in basic English	• Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone • Read and understand text written in basic English • Write a short note/paragraph / letter/e - mail using correct basic English
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	
NA	

Module 11: Career Development & Goal Setting

Mapped to DGT/VSQ/N0104

Terminal Outcomes:

- Demonstrate Career Development & Goal Setting skills.

Duration: *<1.5:00>*	**Duration**: *<2.5:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Identify well-defined short- and long-term goals	• Create a career development plan
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	
NA	

Module 12: Communication Skills

Mapped to DGT/VSQ/N0104

Terminal Outcomes:

- Practice basic communication skills.

Duration: *<4:00>*	**Duration**: *<6:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the importance of communication etiquette including active listening for effective communication	• Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette • Write a brief note/paragraph on a familiar topic • Role play a situation on how to work collaboratively with others in a team
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	
NA	

Module 13: Diversity & Inclusion

Mapped to DGT/VSQ/N0104

Terminal Outcomes:

- Describe PwD and gender sensitisation.

Duration: *<2:00>*	**Duration**: *<3:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss the significance of reporting sexual harassment issues in time	• Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	
NA	

Module 14: Financial and Legal Literacy

Mapped to DGT/VSQ/N0104

Terminal Outcomes:

- Describe ways of managing expenses, income, and savings.

Duration: *<4:00>*	**Duration**: *<6:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss various financial institutions, products, and services • Explain the common components of salary such as Basic, PF, Allowances (HRA, TA, DA, etc.), tax deductions • Discuss the legal rights, laws, and aids	• Demonstrate how to conduct offline and online financial transactions, safely and securely and check passbook/statement • Calculate income and expenditure for budgeting
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	
NA	

Module 15: Essential Digital Skills

Mapped to DGT/VSQ/N0104

Terminal Outcomes:

- Demonstrate procedure of operating digital devices and associated applications safely.

Duration: *<8:00>*	**Duration**: *<12:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe the role of digital technology in day-to-day life and the workplace • Discuss the significance of displaying responsible online behavior while using various social media platforms	• Demonstrate how to operate digital devices and use the associated applications and features, safely and securely • Demonstrate how to connect devices securely to internet using different means • Follow the dos and don'ts of cyber security to protect against cyber crimes • Create an e-mail id and follow e- mail etiquette to exchange e -mails • Show how to create documents, spreadsheets and presentations using appropriate applications • Utilize virtual collaboration tools to work effectively
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	
NA	

Module 16: Entrepreneurship

Mapped to DGT/VSQ/N0104

Terminal Outcomes:

- Describe opportunities as an entrepreneur.

Duration: *<6:00>*	**Duration**: *<9:00>*
Theory – Key Learning Outcomes	**Practical – 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
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	
NA	

Module 17: Customer Service

Mapped to DGT/VSQ/N0104

Terminal Outcomes:

- Describe ways of maintaining customer.

Duration: *<4:00>*	**Duration**: *<6:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Classify different types of customers • Discuss various tools used to collect customer feedback • Discuss the significance of maintaining hygiene and dressing appropriately	• Demonstrate how to identify customer needs and respond to them in a professional manner
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	
NA	

Module 18: Getting ready for apprenticeship & Jobs

Mapped to DGT/VSQ/N0104

Terminal Outcomes:

- Describe ways of preparing for apprenticeship & Jobs appropriately.

Duration: *<6:00>*	**Duration**: *<9:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss the significance of maintaining hygiene and dressing appropriately for an interview • List the steps for searching and registering for apprenticeship opportunities	• Draft a professional Curriculum Vitae (CV) • Use various offline and online job search sources to find and apply for jobs • Role play a mock interview
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	
NA	

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
B.E/B.Tech	Mechanical/Automobile/ Electrical/ Electronics	4	Mechanical/ Automobile/ Electronics/ Instrumentation	1	Mechanical/ Automobile/ Electronics/ Instrumentation	NA
B.E/B.Tech	Mechanical/Automobile/ Electrical/ Electronics	5	Mechanical/ Automobile/ Electronics/ Instrumentation	0	Mechanical/ Automobile/ Electronics/ Instrumentation	NA
Diploma	Mechanical/Automobile/ Electrical/ Electronics	3	Mechanical/ Automobile/ Electronics	1	Mechanical/ Automobile/ Electronics	NA
Diploma	Mechanical/Automobile/ Electrical/ Electronics	4	Mechanical/ Automobile/ Electronics	0	Mechanical/ Automobile/ Electronics	NA
M.E/M.Tech	Mechanical/Automobile/ Electrical/ Electronics	2	Mechanical/Automobile/ Electrical/ Electronics	1	Mechanical/Automobile/ Electrical/ Electronics	NA
M.E/M.Tech	Mechanical/Automobile/ Electrical/ Electronics	3	Mechanical/Automobile/ Electrical/ Electronics	0	Mechanical/Automobile/ Electrical/ Electronics	NA

Trainer Certification	
Domain Certification	**Platform Certification**
"Automotive Manufacturing Data Science Specialist, ASC/Q6417, version 1.0". Minimum accepted score is 80%.	Recommended that the trainer is certified for the job role "Trainer (VET and Skills)", Mapped to Qualification Pack: MEP/Q2601, V2.0" Minimum accepted score is 80%.

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
B.E/B.Tech	Mechanical/Automobile/ Electrical/ Electronics	5	Mechanical/ Automobile/ Electronics/ Instrumentation	1	Mechanical/ Automobile/ Electronics/ Instrumentation	NA
B.E/B.Tech	Mechanical/Automobile/ Electrical/ Electronics	6	Mechanical/ Automobile/ Electronics/ Instrumentation	0	Mechanical/ Automobile/ Electronics/ Instrumentation	NA
Diploma	Mechanical/Automobile/ Electrical/ Electronics	4	Mechanical/ Automobile/ Electronics	1	Mechanical/ Automobile/ Electronics	NA
Diploma	Mechanical/Automobile/ Electrical/ Electronics	5	Mechanical/ Automobile/ Electronics	0	Mechanical/ Automobile/ Electronics	NA
M.E/M.Tech	Mechanical/Automobile/ Electrical/ Electronics	3	Mechanical/Automobile/ Electrical/ Electronics	1	Mechanical/Automobile/ Electrical/ Electronics	NA
M.E/M.Tech	Mechanical/Automobile/ Electrical/ Electronics	4	Mechanical/Automobile/ Electrical/ Electronics	0	Mechanical/Automobile/ Electrical/ Electronics	NA

Assessor Certification	
Domain Certification	**Platform Certification**
"Automotive Manufacturing Data Science Specialist, ASC/Q6417, version 1.0". Minimum accepted score is 80%.	Recommended that the Accessor is certified for the job role "Assessor (VET and Skills)", Mapped to Qualification Pack: MEP/Q2701, V2.0" Minimum accepted score is 80%.

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Assessment Strategy

1. Assessment System Overview:
    - Batches assigned to the assessment agencies for conducting the assessment on SDMS/SIP or email
    - Assessment agencies send the assessment confirmation to VTP/TC looping SSC
    - Assessment agency deploys the ToA certified Assessor for executing the assessment
    - SSC monitors the assessment process & records

2. Testing Environment:
    - Confirm that the centre is available at the same address as mentioned on SDMS or SIP
    - Check the duration of the training.
    - Check the Assessment Start and End time to be as 10 a.m. and 5 p.m.
    - 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.
    - Check the mode of assessment—Online (TAB/Computer) or Offline (OMR/PP).
    - Confirm the number of TABs on the ground are correct to execute the Assessment smoothly.
    - Check the availability of the Lab Equipment for the particular Job Role.

3. Assessment Quality Assurance levels / Framework:
    - Question papers created by the Subject Matter Experts (SME)
    - Question papers created by the SME verified by the other subject Matter Experts
    - Questions are mapped with NOS and PC
    - Question papers are prepared considering that level 1 to 3 are for the unskilled & semi-skilled individuals, and level 4 and above are for the skilled, supervisor & higher management
    - Assessor must be ToA certified & trainer must be ToT Certified
    - Assessment agency must follow the assessment guidelines to conduct the assessment

4. Types of evidence or evidence-gathering protocol:
    - Time-stamped & geotagged reporting of the assessor from assessment location
    - Centre photographs with signboards and scheme specific branding
    - Biometric or manual attendance sheet (stamped by TP) of the trainees during the training period
    - Time-stamped & geotagged assessment (Theory + Viva + Practical) photographs & videos

5. Method of verification or validation:
    - Surprise visit to the assessment location
    - Random audit of the batch
    - Random audit of any candidate

6. Method for assessment documentation, archiving, and access
    - Hard copies of the documents are stored
    - Soft copies of the documents & photographs of the assessment are uploaded / accessed from Cloud Storage

- Soft copies of the documents & photographs of the assessment are stored in the Hard Drives

References

Glossary

Term	Description
Declarative Knowledge	Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish a task or to solve a problem.
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).
OJT (M)	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site
OJT (R)	On-the-job training (Recommended); trainees are recommended the specified hours of training on site
Procedural Knowledge	Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work, or produce a tangible work output by applying cognitive, affective or psychomotor skills.
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.

Acronyms and Abbreviations

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training
SOP	Standard Operating Procedure
WI	Work Instructions
PPE	Personal Protective equipment