

# 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**

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## Training Parameters

<b>Sector</b>	Automotive
<b>Sub-Sector</b>	Manufacturing
<b>Occupation</b>	Production Engineering
<b>Country</b>	India
<b>NSQF Level</b>	6
<b>Aligned to NCO/ISCO/ISIC Code</b>	NCO-2015/NIL
<b>Minimum Educational Qualification and Experience</b>	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
<b>Pre-Requisite License or Training</b>	NA
<b>Minimum Job Entry Age</b>	22 years
<b>Last Reviewed On</b>	
<b>Next Review Date</b>	
<b>NSQC Approval Date</b>	
<b>QP Version</b>	1.0
<b>Model Curriculum Creation Date</b>	
<b>Model Curriculum Valid Up to Date</b>	
<b>Model Curriculum Version</b>	1.0
<b>Minimum Duration of the Course</b>	660 Hours
<b>Maximum Duration of the Course</b>	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
<b>Bridge Module</b>					
Module 1: Introduction to the role of an Automotive Manufacturing Data Science Specialist	5:00	0:00			5:00
<b>ASC/N9810: Manage work and resources (Manufacturing) NOS Version No. – 1.0 NSQF Level – 5</b>	<b>20:00</b>	<b>40:00</b>			<b>60:00</b>
Module 2: Manage work and resources according to safety and conservation standards	20:00	40:00			60:00
<b>ASC/N6445 – Manage data extraction and collection in automotive manufacturing entities NOS Version No. –1.0 NSQF Level - 6</b>	<b>20:00</b>	<b>35:00</b>			<b>55:00</b>
Module 3: Data extraction from the Industrial robots, Automation systems, Machines & other Manufacturing entities	20:00	35:00			55:00
<b>ASC/N6446– Prepare and analyse data by using analytical tools</b>	<b>25:00</b>	<b>35:00</b>			<b>60:00</b>

<b>NOS Version No. –1.0 NSQF Level – 6</b>					
Module 4: Use statistical data analysis software for data preparation and visualization	25:00	35:00			60:00
<b>ASC/N6447 – Develop solutions for complex business problems NOS Version No. –1.0 NSQF Level – 6</b>	<b>25:00</b>	<b>35:00</b>			<b>60:00</b>
Module 5: Development of predictive and analytics solutions	25:00	35:00			60:00
<b>ASC/N6448 – Analyse assembly line data in automotive manufacturing entity NOS Version No. –1.0 NSQF Level – 6</b>	<b>25:00</b>	<b>35:00</b>			<b>60:00</b>
Module 6: Analyse assembly line data in automotive manufacturing entity	25:00	35:00			60:00
<b>Employability Skills (120 hours) NOS Version No. – 1.0 NSQF Level – 7</b>	<b>48:00</b>	<b>72:00</b>			<b>120:00</b>
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
<b>OJT</b>			<b>240:00</b>		<b>240:00</b>
OJT			240:00		240:00
<b>Total Duration</b>	<b>168:00</b>	<b>252:00</b>	<b>240:00</b>		<b>660:00</b>

# 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.

<b>Duration:</b> <05:00>	<b>Duration:</b> <00:00>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• List the role and responsibilities of an Automotive Manufacturing Data Science Specialist.</li> <li>• Discuss the job opportunities for an Automotive Manufacturing Data Science Specialist in the automobile industry.</li> <li>• Explain about Indian automobile manufacturing market.</li> <li>• List various automobile Original Equipment Manufacturers (OEMs) and different products/ models manufactured by them.</li> <li>• Discuss dealership standards and procedures followed in the company.</li> </ul>	
<b>Classroom Aids:</b>	
Whiteboard, marker pen, projector	
<b>Tools, Equipment and Other Requirements</b>	

## 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: <20:00>	Duration: <40:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> <li>• Discuss organisational procedures for health, safety and security and individual role and responsibilities related to the same.</li> <li>• List the potential workplace related risks, threats and hazards, their causes and preventions.</li> <li>• List personal protective equipment like safety gloves, glasses, shoes and mask used at the workplace.</li> <li>• List various types of fire extinguisher.</li> <li>• Identify various safety boards/ signs placed on the shop floor.</li> <li>• Explain 5S standards, procedures and policies followed at workplace.</li> <li>• Discuss organisational procedures to deal with emergencies and accidents at the workplace and importance of following them.</li> <li>• State the importance of conducting safety drills or training sessions.</li> <li>• Explain the process of filling daily check sheet for reporting to the concerned authorities about improvements done and risks identified.</li> <li>• Discuss how and when to report about potential hazards identified in the workplace and limits of responsibility for dealing with them.</li> <li>• Outline the importance of keeping workplace, equipment, restrooms etc. clean and sanitised.</li> <li>• Explain the importance of following hygiene and sanitation regulations developed by organisation at the workplace.</li> <li>• Discuss the importance of maintaining the availability of running water, hand wash and alcohol-based sanitizers at the</li> </ul>	<ul style="list-style-type: none"> <li>• Apply appropriate ways to implement safety practices to ensure safety of people at the workplace.</li> <li>• Display the correct way of wearing and disposing PPE.</li> <li>• Demonstrate the use of fire extinguisher.</li> <li>• Demonstrate how to provide first aid procedure in case of emergencies.</li> <li>• Demonstrate how to evacuate the workplace in case of an emergency.</li> <li>• Employ various techniques for checking malfunctions in the machines with the support of maintenance team and as per Standard Operating Procedures (SOP).</li> <li>• Demonstrate to arrange tools/ equipment/ fasteners/ spare parts into proper trays, cabinets, lockers as mentioned in the 5S guidelines/work instructions.</li> <li>• Apply appropriate ways to organise safety drills or training sessions for others on the identified risks and safety practices.</li> <li>• Prepare a report about the health, safety and security breaches.</li> <li>• Apply appropriate ways to check that workplace, equipment, restrooms etc. are cleaned and sanitised.</li> <li>• Role play a situation to brief the team about the hygiene and sanitation regulations developed by organisation.</li> <li>• Demonstrate the correct way of washing hands using soap and water and alcohol-based hand rubs.</li> <li>• Apply appropriate methods to support the employees to cope with stress, anxiety etc.</li> <li>• Demonstrate proper waste collection and disposal mechanism depending upon types of waste.</li> </ul>

<p>workplace.</p> <ul style="list-style-type: none"> <li>• Discuss the significance of conforming to basic hygiene practices such as washing hands, using alcohol based hand sanitizers or soap.</li> <li>• Recall ways of reporting advanced hygiene and sanitation issues to the concerned authorities.</li> <li>• Elucidate various stress and anxiety management techniques.</li> <li>• Discuss the significance of greening.</li> <li>• Classify different categories of waste for the purpose of segregation.</li> <li>• Differentiate between recyclable and non-recyclable waste.</li> <li>• Discuss various methods of waste collection and disposal.</li> <li>• List the various materials used at the workplace.</li> <li>• Explain organisational recommended norms for storage of tools, equipment and material.</li> <li>• Discuss the importance of efficient utilisation of material and water.</li> <li>• Explain basics of electricity and prevalent energy efficient devices.</li> <li>• Explain the processes to optimize usage of material and energy/electricity.</li> <li>• Enlist common practices for conserving electricity at workplace.</li> </ul>	<ul style="list-style-type: none"> <li>• Perform the steps involved in storage of tools, equipment and material after completion of work.</li> <li>• Employ appropriate ways to resolve malfunctioning (fumes/ sparks/ emission/ vibration/ noise) and lapse in maintenance of equipment as per requirements.</li> <li>• Perform the steps to prepare a sample material and energy audit reports.</li> <li>• Employ practices for efficient utilization of material and energy/electricity.</li> </ul>
<b>Classroom Aids:</b>	
Whiteboard, marker pen, projector	
<b>Tools, Equipment and Other Requirements</b>	
<ul style="list-style-type: none"> <li>• Housekeeping material: Cleaning agents, cleaning cloth, waste container, dust pan and brush set, liquid soap, hand towel, fire extinguisher</li> <li>• Safety gears: Safety shoes, ear plug, goggles, gloves, helmet, first-aid kit</li> </ul>	



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

*Mapped to ASC/N6445, v1.0*

### Terminal Outcomes:

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

Duration: <20:00>	Duration: <35:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> <li>Discuss organizational policies and procedures for documenting databases architectures and backup mechanisms</li> <li>Describe designing and developing the database architecture and pipelines for the solution</li> <li>Discuss the range of standard platforms and tools available and how to use them</li> <li>List database connectors and application connectors for application-cloud communications</li> <li>Discuss updated internal and external cybersecurity regulations</li> <li>Describe the impacts of network on the environment and human health</li> <li>List ETL tools like Talend, SQL Server Integration Services (SSIS), etc.</li> <li>Describe basics of SQL</li> <li>Describe Sales &amp; Service core Processes</li> <li>Describe process KPI of Automotive Sales, Service &amp; Spare Parts</li> </ul>	<ul style="list-style-type: none"> <li>Apply appropriate ways to evaluate the requirements of the business questions to be catered with either visualization platforms or analytics and predictive modelling solutions.</li> <li>Show how to design data architecture for data extraction using connectors and platforms from various departments.</li> <li>Apply appropriate ways to identify the people required to execute the business analytics project requirements</li> <li>Show how to plan and prepare project layout where it should defend the choice of technology and its cost.</li> <li>Show how to prepare an outline of the project execution taking the business questions into consideration.</li> <li>Apply appropriate ways to identify appropriate data attributes to be extracted from various departments.</li> <li>Show how to prepare the timeline and resource requirements.</li> <li>Demonstrate use of project tracking tools and task prioritization for all team members.</li> <li>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.</li> <li>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.</li> <li>Show how to design and create a data warehouse for easy consumption of data</li> </ul>

	<p>points for data analysts.</p> <ul style="list-style-type: none"> <li>Show how to develop data pipelines using connectors to populate the data in the data warehouse</li> </ul>
<b>Classroom Aids:</b>	
Whiteboard, marker pen, projector	
<b>Tools, Equipment and Other Requirements</b>	
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/N6446, v1.0

#### Terminal Outcomes:

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

<b>Duration:</b> <25:00>	<b>Duration:</b> <35:00>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>Describe product portfolio of organization</li> <li>Describe company manufacturing processes.</li> <li>Discuss Standard Operation Procedures (SOP) recommended by manufacturer for using equipment / machinery in use.</li> <li>Describe Descriptive and Inferential statistics</li> <li>Describe types of data wrangling and data cleaning methods</li> <li>Discuss documentation of the organization for the metadata creation.</li> <li>Describe Python open-source libraries like SciPy, Pandas, Matplotlib, SciKit-Learn, etc.</li> <li>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.</li> <li>Describe Python based platforms like Anaconda</li> </ul>	<ul style="list-style-type: none"> <li>Show how to define a business problem and define a business goal</li> <li>Apply appropriate ways to select the relevant source of data to define business goal.</li> <li>Apply appropriate ways to validate the criterion in the business problem with domain person</li> <li>Show how to create a set of metadata for the selected dataset</li> <li>Apply appropriate ways to identify the attributes or columns in the datasets which are most significant from analysis perspective</li> <li>Perform exploratory data analysis to check for missing or duplicate data.</li> <li>Perform descriptive statistics on the data</li> <li>Perform inferential statistics on the data</li> <li>Apply appropriate ways to find correlation amongst the selected attributes of the data .and plot their heatmap. List down highly correlated attributes.</li> </ul>
<b>Classroom Aids:</b>	
Whiteboard, marker pen, projector	
<b>Tools, Equipment and Other Requirements</b>	
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/N6447, 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
<ul style="list-style-type: none"> <li>• Describe different types of visualizations charts Bar Graph, Line Graph, Stacked Bar Graph, Pie Chart, Scatter Plot Chart, etc.</li> <li>• Describe different types and categories of data variables qualitative, quantitative, nominal, ordinal, discrete, continuous, etc.</li> <li>• List different types of visualizations tools like Microsoft PowerBI Desktop, Tableau Public</li> <li>• Describe local machine server architecture</li> </ul>	<ul style="list-style-type: none"> <li>• Show how to install relevant libraries and tools for model making</li> <li>• Show how to split and prepare the dataset into training, validation and testing sets.</li> <li>• Show how to configure hyperparameters for the selected model, establish the training pipelines and execute the training phase.</li> <li>• Show how to store the model and network parameters to be used in the testing phase.</li> <li>• Apply appropriate ways to prevent underfitting and overfitting of the model.</li> <li>• Apply appropriate ways to solve the imbalanced dataset problem when the samples from minority class are very few.</li> <li>• Apply appropriate ways to evaluate the training performance of the machine learning model for training and validation accuracy.</li> <li>• Show how to test the models with testing datasets</li> <li>• Apply appropriate ways to ensure the inference time per sample is as per the business requirement</li> <li>• Apply appropriate ways to evaluate the testing performance of the machine learning model for testing accuracy</li> <li>• Show how to develop a front-end application to fetch inputs from the user and consume developed model for inference</li> <li>• Apply appropriate ways to verify the production performance of the machine learning model</li> <li>• Apply appropriate ways to give feedback on the wrong predictions back to the training phase and retrain the machine learning model</li> </ul>
<b>Classroom Aids:</b>	

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/N6448, v1.0

#### Terminal Outcomes:

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

<b>Duration:</b> <25:00>	<b>Duration:</b> <35:00>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>Describe organizational policies and procedures for documenting network designs and fall-back mechanisms</li> <li>Describe different types of visualizations charts Bar Graph, Line Graph, Stacked Bar Graph, Pie Chart, Scatter Plot Chart, etc.</li> <li>Describe different types and categories of data variables qualitative, quantitative, nominal, ordinal, discrete, continuous, etc.</li> <li>List different types of visualizations tools like Microsoft Power BI Desktop, Tableau Public</li> <li>Describe local machine server architecture</li> <li>Describe Python based on tools like Anaconda, Jupyter, VS Code, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Show how to create demand forecast of the project.</li> <li>Apply appropriate ways to analyse safety and quality data to reduce risk in assembly line</li> <li>Apply appropriate ways to conduct predictive health maintenance of assembly line machines</li> <li>Apply appropriate ways to verify sensor level data sources in assembly line</li> <li>Apply appropriate ways to validate the data which needs expert analysis</li> <li>Show how to deploy project on the local server or cloud</li> <li>Apply appropriate ways to monitor and verify the compatibility of dashboard on different devices</li> <li>Apply appropriate ways to monitor the alert system in real time dashboard as per requirement</li> </ul>
<b>Classroom Aids:</b>	
Whiteboard, marker pen, projector	
<b>Tools, Equipment and Other Requirements</b>	
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

<b>Duration:</b> <1.5:00>	<b>Duration:</b> <1.5:00>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Outline the importance of Employability Skills for the current job market and future of work</li> </ul>	<ul style="list-style-type: none"> <li>• List different learning and employability related GOI and private portals and their usage</li> <li>• Research and prepare a note on different industries, trends, required skills and the available opportunities</li> </ul>
<b>Classroom Aids:</b>	
Whiteboard, marker pen, projector	
<b>Tools, Equipment and Other Requirements</b>	

## Module 8: Constitutional values - Citizenship

### Mapped to DGT/VSQ/N0104

#### Terminal Outcomes:

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

<b>Duration:</b> <1:00>	<b>Duration:</b> <2:00>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Explain constitutional values, civic rights, duties, citizenship, responsibility towards society etc. that are required to be followed to become a responsible citizen.</li> </ul>	<ul style="list-style-type: none"> <li>• Practice different environmentally sustainable practices</li> </ul>
<b>Classroom Aids:</b>	
Whiteboard, marker pen, projector	
<b>Tools, Equipment and Other Requirements</b>	



## Module 9: Becoming a Professional in the 21st Century

### Mapped to DGT/VSQ/N0104

#### Terminal Outcomes:

- Demonstrate professional skills required in 21<sup>st</sup> century

<b>Duration:</b> <2:00>	<b>Duration:</b> <3:00>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Discuss 21st century skills required for employment</li> </ul>	<ul style="list-style-type: none"> <li>• 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</li> <li>• Create a pathway for adopting a continuous learning mindset for personal and professional development</li> </ul>
<b>Classroom Aids:</b>	
Whiteboard, marker pen, projector	
<b>Tools, Equipment and Other Requirements</b>	

## Module 10: Basic English Skills

### Mapped to DGT/VSQ/N0104

#### Terminal Outcomes:

- Practice basic English speaking.

<b>Duration:</b> <8:00>	<b>Duration:</b> <12:00>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Describe basic communication skills</li> <li>• Discuss ways to read and interpret text written in basic English</li> </ul>	<ul style="list-style-type: none"> <li>• Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone</li> <li>• Read and understand text written in basic English</li> <li>• Write a short note/paragraph / letter/e - mail using correct basic English</li> </ul>
<b>Classroom Aids:</b>	
Whiteboard, marker pen, projector	
<b>Tools, Equipment and Other Requirements</b>	

## Module 11: Career Development & Goal Setting

### *Mapped to DGT/VSQ/N0104*

#### Terminal Outcomes:

- Demonstrate Career Development & Goal Setting skills.

<b>Duration:</b> <1.5:00>	<b>Duration:</b> <2.5:00>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Identify well-defined short- and long-term goals</li> </ul>	<ul style="list-style-type: none"> <li>• Create a career development plan</li> </ul>
<b>Classroom Aids:</b>	
Whiteboard, marker pen, projector	
<b>Tools, Equipment and Other Requirements</b>	

## Module 12: Communication Skills

### Mapped to DGT/VSQ/N0104

#### Terminal Outcomes:

- Practice basic communication skills.

<b>Duration:</b> <4:00>	<b>Duration:</b> <6:00>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>Explain the importance of communication etiquette including active listening for effective communication</li> </ul>	<ul style="list-style-type: none"> <li>Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette</li> <li>Write a brief note/paragraph on a familiar topic</li> <li>Role play a situation on how to work collaboratively with others in a team</li> </ul>
<b>Classroom Aids:</b>	
Whiteboard, marker pen, projector	
<b>Tools, Equipment and Other Requirements</b>	

## Module 13: Diversity & Inclusion

### Mapped to DGT/VSQ/N0104

#### Terminal Outcomes:

- Describe PwD and gender sensitisation.

<b>Duration:</b> <2:00>	<b>Duration:</b> <3:00>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>Discuss the significance of reporting sexual harassment issues in time</li> </ul>	<ul style="list-style-type: none"> <li>Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD</li> </ul>
<b>Classroom Aids:</b>	
Whiteboard, marker pen, projector	
<b>Tools, Equipment and Other Requirements</b>	

## Module 14: Financial and Legal Literacy

### Mapped to DGT/VSQ/N0104

#### Terminal Outcomes:

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

<b>Duration:</b> <4:00>	<b>Duration:</b> <6:00>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>Discuss various financial institutions, products, and services</li> <li>Explain the common components of salary such as Basic, PF, Allowances (HRA, TA, DA, etc.), tax deductions</li> <li>Discuss the legal rights, laws, and aids</li> </ul>	<ul style="list-style-type: none"> <li>Demonstrate how to conduct offline and online financial transactions, safely and securely and check passbook/statement</li> <li>Calculate income and expenditure for budgeting</li> </ul>
<b>Classroom Aids:</b>	
Whiteboard, marker pen, projector	
<b>Tools, Equipment and Other Requirements</b>	

## Module 15: Essential Digital Skills

### Mapped to DGT/VSQ/N0104

#### Terminal Outcomes:

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

<b>Duration:</b> <8:00>	<b>Duration:</b> <12:00>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>Describe the role of digital technology in day-to-day life and the workplace</li> <li>Discuss the significance of displaying responsible online behavior while using various social media platforms</li> </ul>	<ul style="list-style-type: none"> <li>Demonstrate how to operate digital devices and use the associated applications and features, safely and securely</li> <li>Demonstrate how to connect devices securely to internet using different means</li> <li>Follow the dos and don'ts of cyber security to protect against cyber crimes</li> <li>Create an e-mail id and follow e- mail etiquette to exchange e -mails</li> <li>Show how to create documents, spreadsheets and presentations using appropriate applications</li> <li>Utilize virtual collaboration tools to work effectively</li> </ul>
<b>Classroom Aids:</b>	
Whiteboard, marker pen, projector	
<b>Tools, Equipment and Other Requirements</b>	

## Module 16: Entrepreneurship

### Mapped to DGT/VSQ/N0104

#### Terminal Outcomes:

- Describe opportunities as an entrepreneur.

<b>Duration:</b> <6:00>	<b>Duration:</b> <9:00>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>Explain the types of entrepreneurship and enterprises</li> <li>Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan</li> <li>Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement</li> </ul>	<ul style="list-style-type: none"> <li>Create a sample business plan, for the selected business opportunity</li> </ul>
<b>Classroom Aids:</b>	
Whiteboard, marker pen, projector	
<b>Tools, Equipment and Other Requirements</b>	



## Module 17: Customer Service

### Mapped to DGT/VSQ/N0104

#### Terminal Outcomes:

- Describe ways of maintaining customer.

<b>Duration:</b> <4:00>	<b>Duration:</b> <6:00>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>Classify different types of customers</li> <li>Discuss various tools used to collect customer feedback</li> <li>Discuss the significance of maintaining hygiene and dressing appropriately</li> </ul>	<ul style="list-style-type: none"> <li>Demonstrate how to identify customer needs and respond to them in a professional manner</li> </ul>
<b>Classroom Aids:</b>	
Whiteboard, marker pen, projector	
<b>Tools, Equipment and Other Requirements</b>	

## Module 18: Getting ready for apprenticeship & Jobs

### Mapped to DGT/VSQ/N0104

#### Terminal Outcomes:

- Describe ways of preparing for apprenticeship & Jobs appropriately.

<b>Duration:</b> <6:00>	<b>Duration:</b> <9:00>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>Discuss the significance of maintaining hygiene and dressing appropriately for an interview</li> <li>List the steps for searching and registering for apprenticeship opportunities</li> </ul>	<ul style="list-style-type: none"> <li>Draft a professional Curriculum Vitae (CV)</li> <li>Use various offline and online job search sources to find and apply for jobs</li> <li>Role play a mock interview</li> </ul>
<b>Classroom Aids:</b>	
Whiteboard, marker pen, projector	
<b>Tools, Equipment and Other Requirements</b>	

# 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/Qxxxx, version 1.0". Minimum accepted score is 80%.	"Trainer, 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/Qxxxx, version 1.0". Minimum accepted score is 80%.	"Assessor; MEP/Q2701 v2.0" Minimum accepted score is 80%.

## 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
<b>Declarative Knowledge</b>	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.
<b>Key Learning Outcome</b>	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).
<b>OJT (M)</b>	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site
<b>OJT (R)</b>	On-the-job training (Recommended); trainees are recommended the specified hours of training on site
<b>Procedural Knowledge</b>	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.
<b>Training Outcome</b>	Training outcome is a statement of what a learner will know, understand and be able to do upon the completion of the training.
<b>Terminal Outcome</b>	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

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