Model Curriculum

QP Name: Automotive IIOT Application Specialist

QP Code: ASC/Q6415

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

Table of Contents

Training Parameters

Sector	Automotive
Sub-Sector	Manufacturing
Occupation	Production Engineering
Country	India
NSQF Level	6
Aligned to NCO/ISCO/ISIC Code	NCO-2015/NIL
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 (Automotive IIOT Application Engineer Level 5) with 2 Years of relevant experience
Pre-Requisite License or Training	NA
Minimum Job Entry Age	22 years
Last Reviewed On	
Next Review Date	
NSQC Approval Date	
QP Version	1.0
Model Curriculum Creation Date	
Model Curriculum Valid Up to Date	
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.

- Verify and approve designing, selection and integration of automation systems
- Manage selection, installation, commissioning and maintenance of industrial Robot
- Manage integration of robots and automation system
- Prepare reports and documents related to installation, commissioning and maintenance of industrial Robot
- Work effectively and efficiently as per schedules and timelines.
- 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 IIOT Application Specialist	5:00	0:00			5:00
ASC/N9810: Manage work and resources (Manufacturing) NOS Version No. – 1.0 NSQF Level – 5	**20:00**	**40:00**			**60:00**
Module 2: Manage work and resources according to safety and conservation standards	20:00	40:00			60:00
ASC/N6441– Plan and design a Network Architecture using IIOT Solutions NOS Version No. –1.0 NSQF Level - 6	**20:00**	**35:00**			**55:00**
Module 3: Design a Network Architecture using IIOT Solutions	20:00	35:00			55:00
ASC/N6442– Manage integration of machineries / Automation Systems in Healthy Communication via IIOT Sensor	**40:00**	**50:00**			**90:00**

NOS Version No. –1.0 **NSQF Level - 6**					
Module 4: Integrate Machineries / Automation Systems via IIOT Sensor	40:00	50:00			90:00
ASC/N6443 – Use Analytics, Edge & Cloud Computing Technologies to make Predictions on Production & Machineries **NOS Version No. –1.0** **NSQF Level - 6**	**25:00**	**35:00**			**60:00**
Module 5: Use Analytics, Edge & Cloud Computing Technologies to make Predictions on Production & Machineries	25:00	35:00			60:00
ASC/N6444– Liaison with vendors and other departments **NOS Version No. –1.0** **NSQF Level - 6**	**10:00**	**20:00**			**30:00**
Module 6: Liaisoning with vendors	10:00	20:00			30:00
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 IIOT Application Specialist

Bridge module

Terminal Outcomes:

- Discuss the role and responsibilities of an Automotive IIOT Application Specialist.

Duration: *<05:00>*	Duration: *<00:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• List the role and responsibilities of an Automotive IIOT Application Specialist. • Discuss the job opportunities for an Automotive IIOT Application 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 automation and manufacturing 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: <20:00>	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: Design a Network Architecture using IIOT Solutions

Mapped to ASC/N6441, v1.0

Terminal Outcomes:
- Identify the network requirements.
- Interpret the various network parameters required as per design
- Develop the network as per design requirements

Duration: *<20:00>*	**Duration**: *<35:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss about information obtained from design document and project develop requirements from the organization/OEM. • Describe development tools, coding language, development platform, OS etc. required for project development. • List machines, automation system to be connected in the IIOT network. • Describe communication model, topology to connect the machines & automation system. • Describe wireless/wired network nodes. • List IIOT sensors, I/O link, edge devices, cloud service, and other networking devices required. • Describe wired/wireless connectivity protocols applied for Machine-to-Machine communications. • Describe wired/wireless connectivity protocols applied for edge device-cloud communications. • Describe network parameters like communication speed, network topology, node address of different devices in the IIOT network. • Discuss the documentation need to maintain related to the final network architecture plan. • Describe IIOT network parameters like node address, communication speed and their effect on the network. • Describe communication test across all devices in the IIOT Network.	• Apply appropriate ways to select appropriate development tools, coding language, development platform, OS etc. as per the project requirements. • Apply appropriate ways to evaluate the IIOT network requirement like node allotment, station setting • Show how to select the machines, automation system to be connected in the IIOT network • Apply appropriate ways to design wireless/wired network nodes while taking into consideration the varieties of IIOT sensors, I/O link, edge devices, cloud service, and other networking devices • Apply appropriate ways to verify the network parameters like communication speed, network topology, node address of different devices in the IIOT network • Show how to build code and configure software, its components and their oriented design. • Show how to configure ports and interfaces, Sender - Receiver communication and Client - Server communication. • Show how to assign nodes to every device in the system. • Apply appropriate ways to monitor that the nodes are optimized appropriately as per design document. • Apply appropriate ways to validate codes of all the components of architecture to ensure required output. • Show how to approve network design based on industrial requirement. • Apply appropriate ways to evaluate regulatory aspects of shopfloor network such as permitted frequency bands,

	possible interference due to high voltage line.
	• Show how to design and develop networking dashboards from edge computing devices.
	• Apply appropriate ways to monitor timelines/deadlines and host review meetings
	• Apply appropriate ways to select the devices & checking their compatibility with the network and system
	• Apply appropriate ways to monitor the IIOT network parameters like node address, communication speed and their effect on the network
	• Show how to map the node address of devices connected in the IIOT network.
	• Apply appropriate ways to verify that defined security standards and encryptions are followed in the EDGE boards and DATA links and as per the design document.
	• Demonstrate procedure of conducting communication test across all devices in the IIOT network.
	• Apply appropriate ways to record the healthy status of all devices & report to organizational project review committee.

Classroom Aids:

Whiteboard, marker pen, projector

Tools, Equipment and Other Requirements

PCs/Laptops, Internet with Wi-Fi (Min2 Mbps Dedicated)

18 documents of PPAP, Design records, Design Records, Authorized Engineering Change Documents, Customer Engineering Approval, Design Failure Modes and Effects Analysis (DFMEA), applied in special situations, Process Flow Diagram, Process Failure Modes and Effects Analysis (PFMEA) Control Plan, Part Submission Warrant (PSW), Engineering Change Documents

Dimensional Results, PLC Simulator, Hydraulic, Pneumatic, Electronic Control Systems Simulator, Internet of Things study material and IOT communication devices, Manufacturing Execution system, manufacturing operation management system.

Hydraulics and pneumatics systems simulator, PLC Simulator with required software, Air Cylinders, valves, connector/tubing simulators, Pick and place robots assembly

Electronics sensor like proximity, optical, magnetic sensors.

Module 4: Integrate Machineries / Automation Systems in Healthy Communication via IIOT Sensor

Mapped to ASC/N6442, v1.0

Terminal Outcomes:

- Organize the elements in different layers of industrial network architecture and protocols
- Establish communication between systems using IIOT Sensors, I/O link master and IIOT EDGE Computing Devices

Duration: *<40:00>*	**Duration**: *<50:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- List software and 3D tools used in organisation. - Describe Network Security Protocols - List relevant standards, procedures and policies related to robotic operations followed in the company. - Discuss data safety and Non-Discloser's Norms. - Illustrate E-Plan as per Customer Requirement. - Describe Team cohesion and collaborative working. - Illustrate IIOT Sensors Connection Details - Describe MODBUS, CC-LINK, Profinet, Profibus, OPC UA, MQTT etc. - Describe network topology like STAR, LINE, RING. - Describe testing of the functioning of backup systems, power connectivity and security access to the EDGE devices from both online and offline mode. - Discuss ways to protect the network from unauthorized access or malicious internet. - Discuss ways to ensure only authorized devices should be able to connect to the network.	- Show how to create an Integration Plan to Map Devices and Systems as per Network Design Document. - Show how to interpret the installed Machines, automation elements, system, and robots into different layers of network architecture like field devices, control devices as per Network Design. - Apply appropriate ways to verify the network consists of devices, automation system and robots - Show how to select suitable network protocols like MODBUS, CC-LINK, Profinet, Profibus, OPC UA, MQTT etc. based on control system requirements - Show how to connect the intelligent devices and system using suitable network topology like STAR, LINE, RING as per network design document. - Apply appropriate ways to monitor the activities related to installation of the systems on the pre-planned locations to distribute the network for max connectivity and reach - Apply appropriate ways to verify the systems & devices integrated as per design documents. - Apply appropriate ways to verify the connections of IIoT Sensors, I/O-Links to the machines, robots Automation systems with the appropriate Network Protocol Like OPC UA, Mod Bus. - Show how to establish the communication between automation system, Machines, and robots by doing parameter setting like baud rate, distance, node ID and node type. - Show how to set the network parameters

	of automation system on the device manufacturers software.
	• Apply appropriate ways to verify the Node-wise Communication having IIOT Sensors, Edge Computing devices.
	• Show how to initiate the Communication between Nodes in the IIOT Network like Machine-to-Machine Communication.
	• Show how to configure the EDGE devices as per the IIOT network configuration
	• Show how to establish healthy communication between machines/ devices and check for device duplicate
	• Demonstrate testing of the functioning of backup systems, power connectivity and security access to the EDGE devices from both online and offline mode.
	• Apply appropriate ways to ensure physical security of the network Contains IIOT Edge Devices, IIOT Sensors, Machines, Robots and Automation System.
	• Apply appropriate ways to protect the network from unauthorized access or malicious internet.
	• Apply appropriate ways to ensure only authorized devices should be able to connect to the network.

Classroom Aids:

Whiteboard, marker pen, projector

Tools, Equipment and Other Requirements

PCs/Laptops, Internet with Wi-Fi (Min2 Mbps Dedicated)

18 documents of PPAP, Design records, Design Records, Authorized Engineering Change Documents, Customer Engineering Approval, Design Failure Modes and Effects Analysis (DFMEA), applied in special situations, Process Flow Diagram, Process Failure Modes and Effects Analysis (PFMEA) Control Plan, Part Submission Warrant (PSW), Engineering Change Documents

Dimensional Results, PLC Simulator, Hydraulic, Pneumatic, Electronic Control Systems Simulator, Internet of Things study material and IOT communication devices, Manufacturing Execution system, manufacturing operation management system.

Hydraulics and pneumatics systems simulator, PLC Simulator with required software, Air Cylinders, valves, connector/tubing simulators, Pick and place robots assembly

Electronics sensor like proximity, optical, magnetic sensors.

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Module 5: Use Analytics, Edge & Cloud Computing Technologies to make Predictions on Production & Machineries

Mapped to ASC/N6443, v1.0

Terminal Outcomes:

- Fetch the Process and Machine data using Edge Computing Devices.
- Use of statistical Tools to organize and analyze the data
- Apply algorithm to make predictions using cloud computing technologies

Duration: *<25:00>*	Duration: *<35:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe data and folder standards. • Describe types of Data Algorithm, Statistical Tools • Describe Cloud Services-Servers, Clients, Network Protocols, Remote Servers • Discuss various relevant sources of data from Machines and Process. • List statistical Tools to organize and analyze the data. • Describe algorithm to make predictions using cloud computing technologies.	• Show how to select the Machine Communication Protocol as per Design Document. • Apply appropriate ways to check for Duplicate Data & validate it. • Apply appropriate ways to monitor the Process using Edge Computing Devices like Production or Machine Status. • Show how to customize the Edge Computing Device Dashboard as per customer requirement. • Apply the statistical tools like regression, standard deviation on the data to analyse the trend and patterns • Perform inferential or descriptive analysis on the data to extrapolate. • Apply appropriate ways to find correlation amongst the selected attributes of the data and statistical proposition. • Apply appropriate ways to analyse the data and trends, then create a model on that using algorithm • Show how to fetch the model into the Cloud Servers • Apply appropriate ways to enable the client services to access data from Cloud Domain. • Apply appropriate ways to make predictions on production process, machine status by access the model from cloud domain
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	
• Basic tool box, Work bench with vice • Sampling tools, sample rejection data • Case studies, shift planning document or software	

Module 6: Liaison with vendors

Mapped to ASC/N6444, v1.0

Terminal Outcomes:

- Demonstrate organisational procedure of liaison with vendors.

Duration: *<10:00>*	**Duration**: *<20:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- Describe ways to interact with different vendors for developing the robotic automation system. - List the steps to be performed for techno-commercial feasibility analysis. - Describe total cost of ownership and factors associated with it. - Discuss the need of ensuring that concerned department and system engineers are trained about usage and application before the installation. - Elaborate ways to analyse the ratio of automation implementation. - Discuss the need of defining the scope of development and information flow among the team members.	- Role play a situation on how to interact with different vendors for developing the robotic automation system. - Apply appropriate ways to check that integrators/developers incorporate all the necessary requirement. - Perform steps to carry out techno-commercial feasibility analysis with system developer. - Show how to identify total cost of ownership implement robotic system in the organization on the basis of techno-commercial feasibility analysis. - Demonstrate organisational procedure of arranging training for users by system developers for easy access of automation system. - Apply appropriate ways to check that users get level of information access as per their usage requirement-based sensitivity of the information. - Show how to study the process thoroughly. - Show how to define the scope of development for the team in current process and information flow among the team members related to the new technology of robotic automation.
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	
Case studies, shift planning document or software	

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	

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	

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	

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	

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	

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	

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	

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	

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	

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	

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	

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	

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 IIOT Application Specialist, ASC/Qxxxx, version 2.0". 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 IIOT Application Specialist, ASC/Qxxxx, version 1.0". Minimum accepted score is 80%.	"Assessor; 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