



Model Curriculum

QP Name: Automotive IIOT Application Technician

QP Code: ASC/Q6413

QP Version: 2.0

NSQF Level: 3.5

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 Support
Occupation	Process Engineering
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2015/2144.0801
Minimum Educational Qualification and Experience	8th Class pass with 2 years of NTC + 1 year experience OR 8th Class pass with 3 years relevant experience OR 10th Class pass and pursuing continuous schooling OR 11th Class pass
Pre-Requisite License or Training	<ul style="list-style-type: none"> • Controls and automation Systems • Information flow systems/ ERP like SAP/ PLM, depending on applicability in organization
Minimum Job Entry Age	20 years
Last Reviewed On	31/03/2022
Next Review Date	31/03/2025
NSQC Approval Date	31/03/2022
QP Version	2.0
Model Curriculum Creation Date	31/03/2022
Model Curriculum Valid Up to Date	31/03/2025
Model Curriculum Version	1.0
Minimum Duration of the Course	420 Hours 00 Minutes
Maximum Duration of the Course	420 Hours 00 Minutes

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 integration of machines, robots and automation system with IIOT network.
- Perform remote monitoring, controlling and fetching of vital machine data of IIOT network.
- Perform maintenance and troubleshooting of IIOT network and devices.
- 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	05:00	00:00			05:00
Module 1: Introduction to the role of an Automotive IIOT Application Technician	05:00	0:00			05:00
ASC/N9803 – Organize work and resources (Manufacturing) NOS Version No. – 1.0 NSQF Level – 3	20:00	35:00			55:00
Module 2: Organize work and resources according to safety and conservation standards	20:00	35:00			55:00
DGT/VSQ/N0102 - Employability Skills (60 hours) NOS Version No. – 1.0 NSQF Level – 5	24:00	36:00			60:00
Module 3: Introduction to Employability Skills	0.5:00	1:00			1.5:00
Module 4: Constitutional values - Citizenship	0.5:00	1:00			1.5:00
Module 5: Becoming a Professional in the 21st Century	1:00	1.5:00			2.5:00

Module 6: Basic English Skills	4:00	6:00			10:00
Module 7: Career Development & Goal Setting	1:00	1:00			2:00
Module 8: Communication Skills	2:00	3:00			5:00
Module 9: Diversity & Inclusion	1:00	1.5:00			2.5:00
Module 10: Financial and Legal Literacy	2:00	3:00			5:00
Module 11: Essential Digital Skills	4:00	6:00			10:00
Module 12: Entrepreneurship	3:00	4:00			7:00
Module 13: Customer Service	2:00	3:00			5:00
Module 14: Getting ready for apprenticeship & Jobs	3:00	5:00			8:00
ASC/N6432 – Support in integration of machines, robots and automation system, IIOT sensors using industrial networking protocols, and I/O link NOS Version No. –1.0 NSQF Level – 4	30:00	80:00	10:00		120:00
Module 15: Integration of machines, robots and automation system using industrial networking protocols, IIOT sensors and I/O link	30:00	80:00	10:00		120:00
ASC/N6433 – Perform remote monitoring, controlling and fetching of vital machine data of the devices connected in the IIOT network NOS Version No. –1.0 NSQF Level – 4	30:00	50:00	10:00		90:00
Module 16: Remote monitoring, controlling and fetching of vital machine data from devices connected in the IIOT network	30:00	50:00	10:00		90:00
ASC/N6434 – Carry out maintenance and troubleshooting of I/O link master and IIOT network devices NOS Version No. –1.0 NSQF Level – 4	30:00	50:00	10:00		90:00
Module 17: Maintenance and troubleshooting of I/O link master and IIOT network devices	30:00	50:00	10:00		90:00
Total Duration	139:00	251:00	30:00		420:00

Module Details

Module 1: Introduction to the role of an Automotive IIOT Application Technician *Bridge module*

Terminal Outcomes:

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

Duration: <05:00>	Duration: <00:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • List the role and responsibilities of an Automotive IIOT Application Technician. • Discuss the job opportunities for an Automotive IIOT Application Technician 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 manufacturing and networking standards and procedures followed in the company. 	
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	

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

Mapped to ASC/N9803, v1.0

Terminal Outcomes:

- Employ appropriate ways to maintain safe and secure working environment.
- Perform work as per the quality standards.
- Apply conservation practices at the workplace.

Duration: <20:00>	Duration: <35:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • List the potential workplace related risks and hazards, their causes and preventions. • Identify PPE to be used at workplace. • Identify various warning signs used at the workplace. • Describe appropriate strategies to deal with emergencies and accidents at the workplace. • Outline the organizational structure to be followed to report about health, safety and security breaches to the concerned authorities. • Discuss the importance of keeping work area clean and tidy. • Discuss the significance of conforming to basic hygiene practices such as washing hands, using alcohol based hand sanitizers or soap. • Discuss organizational hygiene and sanitation guidelines and ways of reporting breaches/gaps if any to the concerned authorities. • Discuss the ways of dealing with stress and anxiety. • Discuss how to complete the given work within the stipulated time period. • Explain how to maintain a proper balance between team and individual goals. • Explain 5S guidelines at workplace. • List the various materials used at the workplace. • Explain organisational recommended procedure for storage of tools, equipment and material after completion of work. • Explain the ways to optimize usage of resources. • Discuss various methods of waste management and its disposal. 	<ul style="list-style-type: none"> • Apply appropriate safety practices to ensure safety of people at the workplace • Display the correct way of wearing and removing PPE such as face masks, hand gloves, face shields, PPE suits, etc. • Demonstrate the use of fire extinguisher. • Apply basic first aid procedure in case of emergencies. • Perform routine cleaning of tools, equipment and machines. • Employ various techniques for checking malfunctions in the equipment as per Standard Operating Procedure (SOP). • Show how to sanitize and disinfect one's work area regularly. • Demonstrate the correct way of washing hands using soap and water. • Demonstrate the correct way of sanitizing hands using alcohol-based hand rubs. • Demonstrate how to evacuate the workplace in case of an emergency. • Demonstrate sorting of materials, tools and equipment and spare parts after completion of work. • Demonstrate the steps involved in storage of tools, equipment and material after completion of work. • Perform basic checks to identify any spills and leaks and that need to be plugged /stopped. • Demonstrate different disposal techniques depending upon types of waste. • Employ different ways to check if equipment/machines are functioning as per requirements and report malfunctioning, if observed. • Employ ways for efficient utilization of

<ul style="list-style-type: none"> List the different categories of waste for the purpose of segregation Differentiate between recyclable and non-recyclable waste State the importance of using appropriate colour dustbins for different types of waste. Discuss common practices for conserving electricity at workplace. Discuss the common sources of pollution and ways to minimize it. 	<p>material and water.</p>
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Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	
<ul style="list-style-type: none"> 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: Introduction to Employability Skills

Mapped to DGT/VSQ/N0102

Terminal Outcomes:

- Discuss about Employability Skills in meeting the job requirements

Duration: <0.5:00>	Duration: <1:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Discuss the importance of Employability Skills in meeting the job requirements 	<ul style="list-style-type: none"> • List different learning and employability related GOI and private portals and their usage
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	

Module 4: Constitutional values - Citizenship

Mapped to DGT/VSQ/N0102

Terminal Outcomes:

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

Duration: <0.5:00>	Duration: <1:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain constitutional values, civic rights, duties, citizenship, responsibility towards society etc. that are required to be followed to become a responsible citizen. 	<ul style="list-style-type: none"> • Show how to practice different environmentally sustainable practices
Classroom Aids:	

Whiteboard, marker pen, projector

Tools, Equipment and Other Requirements

Module 5: Becoming a Professional in the 21st Century

Mapped to DGT/VSQ/N0102

Terminal Outcomes:

- Demonstrate professional skills required in 21st century

Duration: <1:00>	Duration: <1.5:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Discuss 21st century skills. • Describe the benefits of continuous learning 	<ul style="list-style-type: none"> • Exhibit 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.
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	

Module 6: Basic English Skills

Mapped to DGT/VSQ/N0102

Terminal Outcomes:

- Practice basic English speaking.

Duration: <4:00>	Duration: <6:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes

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

Module 7: Career Development & Goal Setting

Mapped to DGT/VSQ/N0102

Terminal Outcomes:

- Demonstrate Career Development & Goal Setting skills.

Duration: <1:00>	Duration: <1:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> Discuss need of career development plan 	<ul style="list-style-type: none"> Demonstrate how to communicate in a well -mannered way with others. Create a career development plan with well-defined short- and long-term goals
Classroom Aids:	
Whiteboard, marker pen, projector	

Tools, Equipment and Other Requirements

Module 8: Communication Skills

Mapped to DGT/VSQ/N0102

Terminal Outcomes:

- Practice basic communication skills.

Duration: <2:00>	Duration: <3:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the importance of active listening for effective communication • Discuss the significance of working collaboratively with others in a team 	<ul style="list-style-type: none"> • Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	

Module 9: Diversity & Inclusion

Mapped to DGT/VSQ/N0102

Terminal Outcomes:

- Describe PwD and gender sensitisation.

Duration: <1:00>	Duration: <1.5:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> Discuss the significance of reporting sexual harassment issues in time 	<ul style="list-style-type: none"> 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 10: Financial and Legal Literacy

Mapped to DGT/VSQ/N0102

Terminal Outcomes:

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

Duration: <2:00>	Duration: <3:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> List the common components of salary and compute income, expenditure, taxes, investments etc. Discuss the legal rights, laws, and aids 	<ul style="list-style-type: none"> Outline the importance of selecting the right financial institution, product, and service Demonstrate how to carry out offline and online financial transactions, safely and securely
Classroom Aids:	

Whiteboard, marker pen, projector

Tools, Equipment and Other Requirements

Module 11: Essential Digital Skills

Mapped to DGT/VSQ/N0102

Terminal Outcomes:

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

Duration: <4:00>	Duration: <6:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe the role of digital technology in today’s life • Discuss the significance of using internet for browsing, accessing social media platforms, safely and securely 	<ul style="list-style-type: none"> • Show how to operate digital devices and use the associated applications and features, safely and securely • Create sample word documents, excel sheets and presentations using basic features • Utilize virtual collaboration tools to work effectively
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	

Module 12: Entrepreneurship

Mapped to DGT/VSQ/N0102

Terminal Outcomes:

- Describe opportunities as an entrepreneur.

Duration: <3:00>	Duration: <4:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Create a sample business plan, for the selected business opportunity
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	

Module 13: Customer Service

Mapped to DGT/VSQ/N0102

Terminal Outcomes:

- Describe ways of maintaining customer.

Duration: <2:00>	Duration: <3:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> Explain the significance of identifying customer needs and addressing them. Explain the significance of identifying customer needs and responding to them 	<ul style="list-style-type: none"> Demonstrate how to maintain hygiene and dressing appropriately.

<p>in a professional manner.</p> <ul style="list-style-type: none"> Discuss the significance of maintaining hygiene and dressing appropriately. 	
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	

Module 14: Getting ready for apprenticeship & Jobs

Mapped to DGT/VSQ/N0102

Terminal Outcomes:

- Describe ways of preparing for apprenticeship & Jobs appropriately.

Duration: <3:00>	Duration: <5:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> Discuss the significance of maintaining hygiene and confidence during an interview List the steps for searching and registering for apprenticeship opportunities 	<ul style="list-style-type: none"> Create a professional Curriculum Vitae (CV) Use various offline and online job search sources such as employment exchanges, recruitment agencies, and job portals respectively Perform a mock interview
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	

Module 15: Integration of machines, robots and automation system using industrial networking protocols, IIOT sensors and I/O link

Mapped to ASC/N6432, v1.0

Terminal Outcomes:

- Perform steps to read network design and identify devices and systems need to be connected on IIOT network.
- Demonstrate organisational procedure of integrating machines, robots and automation system by using industrial networking protocols, IIOT sensors and I/O links.

Duration: <30:00> Theory – Key Learning Outcomes	Duration: <90:00> Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe different layers of network architecture. • List various devices and systems to be connected in the IIOT network. • Describe functioning of various network devices like routers, network switch, repeaters. • Illustrate design of industrial network between devices based on protocols, topology and device parameters. • Elaborate ways to analyse the installed Machines, automation elements, system and robots into different layers of network architecture. • Describe types of network protocols, topology and its significance. • Discuss device manufacturer software for network parameter settings and device communication. • Discuss the selection criteria of suitable network protocols like MODBUS,CC-LINK, Profinet, Profibus, OPC UA, MQTT etc. based on control system requirements. • List the steps to be performed for installing network protocols in the system. • Describe network topology like STAR, LINE, RING. • List the steps to be performed for connecting the intelligent devices and system by using suitable network topology like STAR, LINE, RING as per network design document. • Discuss working and integration of different elements using I/O link master to the controller. 	<ul style="list-style-type: none"> • Employ appropriate ways to interpret the network consists of devices, automation system and robots. • Demonstrate Standard operation procedures recommended by manufacturer for using equipment / machinery. • Show how to support engineer for the selection of suitable network protocols like MODBUS,CC-LINK, Profinet, Profibus, OPC UA, MQTT etc. based on control system requirements. • Demonstrate organisational procedure installing the network protocols and connecting the intelligent devices in the system. • Apply appropriate ways to evaluate the impacts of IIOT network on the environment and humans. • Show how to install and connect the automation elements like sensors, control devices to I/O link master. • Apply appropriate ways to install the cable between devices in align with signalling parameters. • Employ appropriate ways to establish the communication between automation system, intelligent devices and robots. • Show how to support the engineer during setting of the network parameters of automation system on the device software. • Show how to turn on the power of automation devices, system in the network and observe their functioning.

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| <ul style="list-style-type: none"> • Describe data types like machine, process and control data from robot and automation system in the network. • Discuss the need of automation elements like sensors, control devices in the system. • Describe signaling parameters like bend radius, signal ground, terminal resistor, cable length etc. and their impact on system functioning. • Describe parameter like baud rate, distance, station ID and station type and how to set them in the system. • Describe ways to provide physical security of the network contains IIOT Sensors, Machines, Robots and Automation System. • Explain the organisational specified policies and procedures for conducting trial run of the system. • List the documents needed to be prepared related to procurement, trial run and modifications done on the system. • Discuss the records and documents needed to be prepared and maintained such as experience under development, TGW /TGR faced during process trials etc. as a reference for future development. | <ul style="list-style-type: none"> • Apply appropriate ways to protect the network from unauthorized access or malicious internet and allow only authorized devices to connect to the network. • Employ appropriate ways for conducting trial run of the systems as per the e-plan to align it with existing or new manufacturing process. • Dramatize a situation on how to handover the system and support the engineer for providing training on it to production team as per SOP. |
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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, 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 16: Remote monitoring, controlling and fetching of vital machine data from the devices connected in the IIOT Network

Mapped to ASC/N6433, v1.0

Terminal Outcomes:

- Perform the steps to monitor the devices connected in the IIOT Network.
- Demonstrate organisational procedure of controlling and fetching vital machine data from the devices connected in the IIOT network.

Duration: <30:00>	Duration: <60:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Recall organizational policies and procedures for sharing data and documenting network designs and fallback mechanisms. • Discuss standard templates and tools available and how to use them. • Describe connectivity protocols for device-cloud communications and wired/wireless connectivity protocols for device-device or device-gateway communications. • Describe network management dashboards and applications. • Describe network topologies, wired and wireless technologies, fiber optics, etc. • Recall internal and external network regulations. • Discuss ways to monitor life of subsystems with user defined limits and analyse the present condition of the machines, Robots and Automation System (cycling, idle, setup, breakdown). • Discuss the information obtained from machine power consumption report and machine spare part life utilization report. • Discuss reasons for machine idleness, machine setup activity, machine breakdown activity. • Elaborate ways to analyse the real time feed override, consumable request, system alarm etc. 	<ul style="list-style-type: none"> • Show how to conduct on-site surveys on the IIOT network and assess system requirements. • Apply appropriate ways to monitor and record status of on field device and detect sources of network interference. • Employ appropriate ways to eliminate the impact of network interference. • Apply appropriate ways to monitor the real time open alarm and machine status and system logs of the IIOT network. • Employ appropriate ways to manage production, quality & preventive maintenance plans remotely. • Show how to fetch machine power consumption report and machine spare part life utilization report. • Apply appropriate ways to identify and analyse reasons for machine idleness, machine setup activity, machine breakdown activity.
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 17: Maintenance and troubleshooting of I/O link master and IIOT network devices

Mapped to ASC/N6434, v1.0

Terminal Outcomes:

- Demonstrate procedure of maintenance and troubleshooting of I/O link master and IIOT network devices.

Duration: <30:00>	Duration: <60:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe connectivity protocols for device-cloud communications and wired/wireless connectivity protocols for device-device or device-gateway communications. • Elaborate ways to analyse the machine alarms - start time, end time, duration, reason with graphical view and report. • Elaborate ways to analyse MTTR & MTBF report, breakdown, OEE, machine power consumption and machine spare part life utilization report. • Discuss ways to troubleshoot and analyse of IIOT networks and endpoints. • List the steps to be performed for conducting network assessments. • Discuss ways to identify network blind spots. • Discuss ways to diagnose and resolve network issues. • List the steps to be performed for conducting line test on devices connected on the IIOT network and hardware test on communication modules, I/O link master. 	<ul style="list-style-type: none"> • Show how to raise alert for Machine maintenance related activities via SMS/Email. • Apply appropriate ways to troubleshoot and analyse IIoT networks and endpoints. • Show how to identify network blind spots. • Apply appropriate ways to diagnose and resolve network configuration and connectivity issues. • Demonstrate organisational procedure of conducting line test on devices connected on the IIOT network and hardware test on communication modules, I/O Link master.
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	
3D Printing machines- Fixed Deposition Modelling Machine, Stereo-Lithography Machine, Metal Sintering Machine & any other type of 3D printing machine with the all the consumables required, Flash Drive (With pre-stored program)	

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 /Electronics/ Instrumentation	2	Mechanical/ Automobile	1	Mechanical/ Automobile	NA
B.E./B.Tech	Mechanical/Automobile/ Electronics/ Instrumentation	3	Designing	0	Training	NA
Diploma	Mechanical/Automobile/ Electrical	3	Designing	1	Training	NA
Diploma	Mechanical/Automobile/ electrical	4	Designing	0	Training	NA

Trainer Certification	
Domain Certification	Platform Certification
“Automotive IIOT Application Technician, ASC/Q6413, version 1.0”. Minimum accepted score is 80%.	Recommender 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/Electrical/Automobile/ Instrumentation	3	Mechanical/ Electrical/ Automobile	1	Mechanical/ Electrical/ Automobile	NA	
B.E/B.Tech	Mechanical/Electrical/Automobile/ Instrumentation	4	Designing	0	Assessment	NA	
Diploma	Mechanical/Electrical/Automobile	4	Designing	1	Assessment	NA	
Diploma	Mechanical/Electrical/Automobile	5	Designing	0	Assessment	NA	

Assessor Certification	
Domain Certification	Platform Certification
<p>“Automotive IIOT Application Technician, ASC/Q6413, version 1.0”. Minimum accepted score is 80%.</p>	<p>Recommender that the Assessor is certified for the job role “Assessor (VET and Skills)”, Mapped to Qualification Pack: MEP/Q2701, V2.0” Minimum accepted score is 80%.</p>

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