Model Curriculum

QP Name: Automotive Cyber Security Specialist

QP Code: ASC/Q8312

QP Version: 1.0

NSQF Level: 6

Model Curriculum Version: 1.0

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

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Training Parameters

Sector	Automotive
Sub-Sector	Research & Development
Occupation	Automotive Product Development
Country	India
NSQF Level	6
Aligned to NCO/ISCO/ISIC Code	NCO-2015/2523.9900
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 Cyber Security Engineer Level 5.5) with 2 Years of relevant experience ** Knowledge of Cybersecurity, IOT security
Pre-Requisite License or Training	NA
Minimum Job Entry Age	22 years
Last Reviewed On	28/02/2023
Next Review Date	28/02/2026
NSQC Approval Date	28/02/2023
QP Version	1.0
Model Curriculum Creation Date	28/02/2023
Model Curriculum Valid Up to Date	28/02/2026
Model Curriculum Version	1.0
Minimum Duration of the Course	690 Hours
Maximum Duration of the Course	690 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.

- Assess project requirements on secured communication between manufacturing entities.
- Manage integration of edge devices with IIOT sensors in a secured communication network platform.
- Perform validation of edge, cloud applications in the secured communication network platform.
- Analyse security incidents data from the manufacturing entities.
- Manage the team to implement fall back mechanism during threat assessment.
- Work effectively and efficiently as per schedules and timelines.
- Implement safety practices.
- Use resources optimally to ensure less wastage and maximum conservation.

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 Cyber Security Specialist	5:00	0:00			5:00
ASC/N9818: Manage work and resources (Research & development) NOS Version No. – 1.0 NSQF Level – 5	**15:00**	**40:00**			**55:00**
Module 2: Manage work and resources according to safety and conservation standards	15:00	40:00			55:00
Employability Skills (120 hours) NOS Version No. – 1.0 NSQF Level – 7	**48:00**	**72:00**			**120:00**
Module 3: Introduction to Employability Skills	1.5:00	1.5:00			3:00
Module 4: Constitutional values - Citizenship	1:00	2:00			3:00
Module 5: Becoming a Professional in the 21st Century	2:00	3:00			5:00
Module 6: Basic English Skills	8:00	12:00			20:00
Module 7: Career Development & Goal Setting	1.5:00	2.5:00			4:00
Module 8: Communication	4:00	6:00			10:00

Skills					
Module 9: Diversity & Inclusion	2:00	3:00			5:00
Module 10: Financial and Legal Literacy	4:00	6:00			10:00
Module 11: Essential Digital Skills	8:00	12:00			20:00
Module 12: Entrepreneurship	6:00	9:00			15:00
Module 13: Customer Service	4:00	6:00			10:00
Module 14: Getting ready for apprenticeship & Jobs	6:00	9:00			15:00
ASC/N8330 – Manage Integration of Edge, Cloud Application and Platform security NOS Version No. –1.0 NSQF Level – 6	**35:00**	**40:00**	**105:00**		**180:00**
Module 15: Assess project requirements	10:00	10:00	35:00		55:00
Module 16: Manage development and integration of cyber security system	15:00	20:00	35:00		70:00
Module 17: Manage post-integration activities	10:00	10:00	35:00		55:00
ASC/N8331 – Analyse and interpret Security Incidents data and enhance analytics processes NOS Version No. –1.0 NSQF Level - 6	**65:00**	**70:00**	**105:00**		**240:00**
Module 18: Analyse security incidents data from the Manufacturing Entities	20:00	25:00	35:00		80:00
Module 19: Manage the team to implement fall back mechanism during threat assessment	25:00	20:00	35:00		80:00
Module 20: Post-threat assessment activities	20:00	25:00	35:00		80:00
ASC/N8312 – Liasoning with vendors NOS Version No. –1.0 NSQF Level - 7	**45:00**	**45:00**			**90:00**
Module 21: Collaboration with system developers	15:00	15:00			30:00
Module 22: Pre and post support activities	15:00	15:00			30:00
Module 23: Process and scope of development	15:00	15:00			30:00
Total Duration	**213:00**	**267:00**	**210:00**		**690:00**

Module Details

Module 1: Introduction to the role of an Automotive Cyber Security Specialist

Bridge module

Terminal Outcomes:

- Discuss the role and responsibilities of an Automotive Cyber Security Specialist.

Duration: *<05:00>*	**Duration**: *<00:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• List the role and responsibilities of an Automotive Cyber Security Specialist. • Discuss the job opportunities for an Automotive Cyber Security 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 cyber security 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/N9818, v1.0

Terminal Outcomes:

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

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

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

Module 3: 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 4: 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 5: 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 6: 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 7: 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 8: 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 9: 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 10: 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 11: 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 12: 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 13: 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 14: 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	

Module 15: Assess project requirements

Mapped to ASC/N8330, v1.0

Terminal Outcomes:

- Perform steps to assess project requirements on secured communication between manufacturing entities.

Duration: *<10:00>*	**Duration**: *<10:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss the information obtain from e-plan/project document, Network Diagram, Threat Assessment Report. • Describe core and auxiliary support processes • Describe connectivity protocols for device-cloud communications (this may include protocols such as 5G, wi-fi, gsm, gprs, and satellite) • Describe wired/wireless connectivity protocols for device-device or device-gateway communications (this may include protocols such as nfc, nb-iot, bluetooth/ble, zigbee, mesh, and lora) • Illustrate network management dashboards and applications (such as hp open view) • Describe network topologies, wired and wireless technologies, fiber optics, etc. • Discuss internal and external network regulations • Describe impacts of network on the environment and human health • Describe need of feasibility report.	• Show how to evaluate the requirements of the manufacturing entities to be connected in the secured Network • Show how to interpret the network diagram consists of Edge Devices along with network parameter settings • Apply appropriate ways to select appropriate core and auxiliary support process as per threat assessment report • Show how to prepare feasibility report to develop secured network communication
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.	

Module 16: Manage development and integration of cyber security system

Mapped to ASC/N8330, v1.0

Terminal Outcomes:

- Perform steps to manage development and integration of cyber security system with Edge Devices and IIOT Sensors.

Duration: *<15:00>*	**Duration**: *<20:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe processes for handling security across various solution layers • Discuss ways to manage Malware Software • Discuss ways to manage Intrusion Prevention Systems • Describe various Global security standards	• Show how to select encryption standards (Global cyber security standards: DFARS, FISMA, ISO22301) for Secured Network Communication as per the communication network requirements • Role play a situation on how to guide the engineers during the development of cyber security system architecture • Apply appropriate ways to test the draft cyber security system architecture and take approval for implementation from concerned authority • Apply appropriate ways to integrate the cyber security system architecture with edge devices and IIOT sensors • Apply appropriate ways to check that all the devices are connected properly in Secured Communication Network platform • Show how to assign appropriate communication protocol to devices of network requirement
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.	

Module 17: Manage post-integration activities

Mapped to ASC/N8330, v1.0

Terminal Outcomes:

- Perform post-integration activities.

Duration: *<10:00>*	**Duration**: *<10:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• List steps to install firewalls and data encryption protocols • Describe internal and external security regulations and standards • List network development documents and records need to be maintain as per the organizational procedures	• Apply appropriate ways to validate Secured networks across diverse components for end-to-end communication • Apply appropriate ways to ensure that developed network should supports bulk configuration functionalities across the multiple solution components • Apply appropriate ways to monitor the working of security system • Show how to protect the IIOT Network & Edge Devices from Unauthorized Access or Malicious Activity • Show how to maintain & update healthy status of all manufacturing entities
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.	

Module 18: Analyse security incidents data from the Manufacturing Entities

Mapped to ASC/N8331, v1.0

Terminal Outcomes:

- Perform steps to analyse the security incidents data from the manufacturing entities.

Duration: *<20:00>*	**Duration**: *<25:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss the information obtain from security incident reports. • List threat assessment tools to detect any security incidents • Describe various signaling parameters required to do cable installation between devices • Describe device parameters like station id, baud rate etc. To the devices connected to the network • Describe working and integration of different elements using i/o link master to the controller • Describe data types like machine, process and control data from robot and automation system in the network • Discuss functioning of various network devices like routers, network switch, repeater • Elaborate ways to analyse the network solution which performs security incidents	• Demonstrate use of automated threat assessment tools to detect any security incidents in the secured network platform • Show how to analyse the network solution which performs security incidents such as threat & vulnerability management • Apply appropriate ways to ensure that cloud applications, architecture and controls are operating as per the threat assessment & security processes • Apply appropriate ways to verify the integrity of third-party applications, devices & software • Show how to prepare the threat assessment report to develop disaster recovery plan on the basis of security system analysis
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.	

Module 19: Manage the Team to implement fall back Mechanism during Threat Assessment

Mapped to ASC/N8331, v1.0

Terminal Outcomes:

- Perform steps to manage the team to implement fall back mechanism during threat assessment.

Duration: *<25:00>*	**Duration**: *<20:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe processes for handling security across various solution layers • Discuss ways to manage Malware Software how to manage Intrusion Prevention Systems • Describe functioning of fallback mechanisms • Describe need of Disaster Recovery Plans • Describe threat detection process	• Show how to design fallback mechanisms in case of network disruptions and outages • Apply appropriate ways to prepare & implement Fall back Mechanism (Disaster Recovery Plans) • Role play a situation on how to guide the team to perform regular maintenance of threat detection process • Prepare records of the security incidents detected • Role play a situation on discussing the team to develop or update Recovery Plans as per requirement • Apply appropriate ways to check that network having third-party devices has appropriate protection from the unauthorized access or malicious internet activities
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	
Threat detection tools, firewall system, fall back mechanism, sample disaster recovery plan	

Module 20: Post-threat assessment activities

Mapped to ASC/N8331, v1.0

Terminal Outcomes:

- Perform post – threat assessment activities.

Duration: *<20:00>*	**Duration**: *<25:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe various critical threats & vulnerability across all the network layers in the IIOT network • Discuss ways to manage Malware Software how to manage Intrusion Prevention Systems • List steps to install firewalls and data encryption protocols • Describe process of response planning	• Apply appropriate ways to verify any critical threats & vulnerability across all the network layers in the IIOT network solutions • Perform steps to prepare response planning & share with the appropriate people for investigation/action • Apply appropriate ways to monitor restoration & recovery plan to the systems affected by security incidents
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	
Threat detection tools, firewall system, sample recovery plan	

Module 21: Collaboration with system developers

Mapped to ASC/N8312, v1.0

Terminal Outcomes:

- Demonstrate organisational procedure of collaborating with system developers.

Duration: *<15:00>*	**Duration**: *<15:00>*
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.	• 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.
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	
Case studies, shift planning document or software	

Module 22: Pre and post support activities

Mapped to ASC/N8312, v1.0

Terminal Outcomes:

- Demonstrate pre and post support activities.

Duration: *<15:00>*	**Duration**: *<15:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss the need of ensuring that concerned department and system engineers are trained about usage and application before the installation.	• 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.
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	
Case studies, shift planning document or software	

Module 23: Process and scope of development

Mapped to ASC/N8312, v1.0

Terminal Outcomes:

- Describe process and scope of development.

Duration: *<15:00>*	**Duration**: *<15:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• 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.	• 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	

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 Cyber Security Specialist, ASC/Q8312, version 1.0". Minimum accepted score is 80%.	"Trainer, MEP/Q2601 Trainer (VET and Skills), Version-2" 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 Cyber Security Specialist, ASC/Q8312, version 1.0". Minimum accepted score is 80%.	"MEP/Q2701 Accessor (VET and Skills), Version-2" 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
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 Occupatiaonal 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