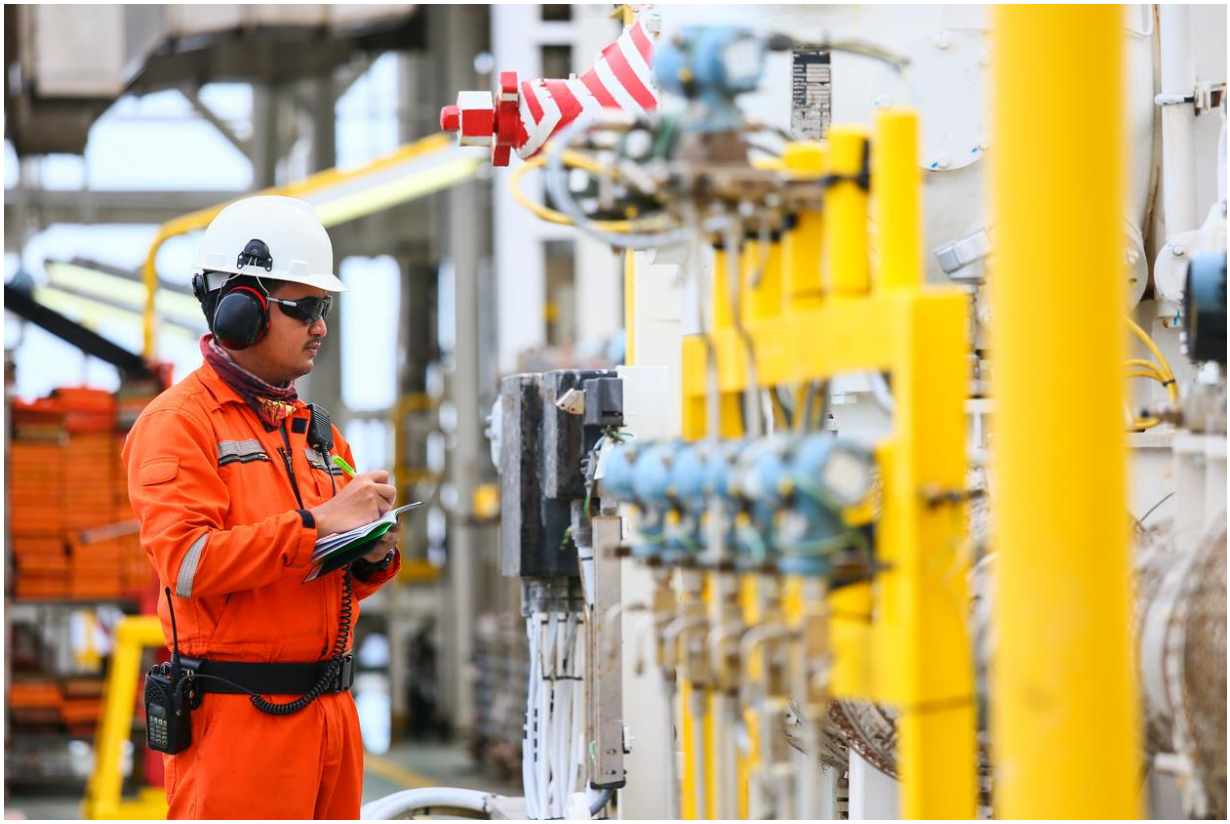

Model Curriculum

QP Name: Industrial automation safety engineer

QP Code: CSC/Q416 V1.0

Version: 1.0

NSQF Level: 5.5

Model Curriculum Version: 1.0

Capital Goods & Strategic Skill Council || 39, 1st Floor, Samyak Tower, Pusa Rd, Block 9A, WEA Karol Bagh, New Delhi – 110001 || email: ceo@cgssc.org

Table of Contents

Training Parameters

Sector	Capital Goods
Sub-Sector	Machine Tools, Dies, Moulds and Press Tools, Plastics Manufacturing Machinery, Textile Manufacturing Machinery, Process Plant Machinery, Electrical and Power Machinery, Light Engineering Goods, Defence Equipment, FireFighting & Safety Equipment
Occupation	Service
Country	India
NSQF Level	5.5
Aligned to NCO/ISCO/ISIC Code	2141.2500
Minimum Educational Qualification and Experience	UG Degree in relevant field + 3 years of relevant experience or 3 Years UG Degree in Science and Technology (B.Sc / BCA) / 4 years BE, B.Tech (Electrical, Electronics, Mechanical, Mechatronics, Instrumentation and Control)* or 10th grade pass +3 years Diploma in relevant field + 4 year of relevant experience or Previous NSQC level 5 + 1.5 years of relevant experience *Subject to being offered as 6 months internship/ project
Pre-Requisite License or Training	NA
Minimum Job Entry Age	24 Years
Last Reviewed On	31st January 2024
Next Review Date	31st January 2027
NSQC Approval Date	31st January 2024
QP Version	1.0
Model Curriculum Creation Date	31st January 2024
Model Curriculum Valid Up to Date	30 January 2027
Model Curriculum Version	1.0

Minimum Duration of the Course	570 Hours
Maximum Duration of the Course	570 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 to:

- Conduct thorough risk assessments for industrial automation processes and identify potential hazards
- Implement and enforce robust health, safety, and environmental practices within the workplace.

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
CSC/N0526: Ensure safety of automated system **NOS Version- 1.0** **NSQF Level- 5.5**	**25:00**	**35:00**	**0:00**	**00:00**	**60:00**
Module 1: Introduction to the role of an Industrial Automation Safety Engineer	05:00	00:00	0:00	00:00	05:00
Module 2: Perform Risk Assessment and Implementation of safety protocols to ensure safety of automated system	20:00	35:00	0:00	00:00	55:00
CSC/N0527: Identify hazards, develop safety standards and protocols **NOS Version-1.0** **NSQF Level- 5.5**	**30:00**	**60:00**	**30:00**	**00:00**	**120:00**
Module 3: Carry Identification of hazards, develop safety standards and protocols	30:00	60:00	30:00	00:00	120:00
CSC/N0528 : Design safety testing measures **NOS Version-1.0** **NSQF Level- 5.5**	**35:00**	**55:00**	**30:00**	**00:00**	**120:00**
Module 4: Carry out designing of					

safety testing measures	35:00	55:00	30:00	00:00	120:00
CSC/N0529: Implement safety testing measures to prevent accident/injury **NOS Version-1.0** **NSQF Level- 5.5**	**25:00**	**35:00**	**30:00**	**00:00**	**90:00**
Module 5: Implement safety testing measures to prevent accident/injury	25:00	35:00	30:00	00:00	90:00
CSC/N1339 Collaboratively coordinate with the team **NOS Version- 1.0** **NSQF Level- 6**	**35:00**	**55:00**	**0:00**	**00:00**	**90:00**
Module 6: Collaboratively coordinate with the team	35:00	55:00	0:00	00:00	90:00
CSC/N0505 Health, Safety and Environment at workplace **NOS Version- 1.0** **NSQF Level- 6**	**10:00**	**20:00**	**00:00**	**00:00**	**30:00**
Module 7: Health, Safety and Environment at workplace	10:00	20:00	00:00	00:00	30:00
DGT/VSQ/N0102 - Employability Skills (60 hours) **NOS Version No. – 1.0** **NSQF Level – 5**	**20:00**	**40:00**	**00:00**	**00:00**	**60:00**
Module 8: Introduction to Employability Skills	20:00	40:00	00:00	00:00	60:00
Total Duration	**180:00**	**300:00**	**90:00**	**00:00**	**570:00**

Module Details

Module 1: Introduction to the role of an Industrial Automation Safety Engineer

Bridge Module, Mapped to CSC/N0526 v1.0

Terminal Outcomes:

- Discuss the job role of an Industrial automation safety engineer.

Duration: 05:00	Duration: 0:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe the size and scope of the capital good industry and its sub-sectors. • Discuss the role and responsibilities of an Industrial automation safety engineer. • Identify various employment opportunities for an Industrial automation safety engineer.	
Classroom Aids	
Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
NA	

Module 2: Ensure safety of automated system

Bridge Module, Mapped to CSC/N0526 v1.0

Terminal Outcomes:

- Develop and implement comprehensive safety protocols for the automated system.
- Conduct thorough risk assessments and implements effective mitigation strategies to minimize potential hazards.
- Establish a continuous monitoring system and implements improvements to enhance the safety of the automated system over time.

Duration: 25:00	**Duration: 35:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the fundamental principles and concepts of automation safety. • Define key terms related to industrial automation safety, including risk assessment, hazard analysis, and safety integrity level (SIL). • Familiarize oneself with relevant national and international safety standards (e.g., ISO 13849, IEC 61508) and regulations applicable to industrial automation. • Interpret and apply safety standards to assess and ensure compliance in automated systems. • Discuss the need of Risk Assessment and Hazard Analysis • Explain the concept of Safety Instrumented Systems and their role in minimizing risks in automated processes. • Explain the principles of designing, implementing, and maintaining SIS to achieve a specified safety integrity level. • Describe the purpose and implementation of interlocking systems in automated processes. • Identify types of safety interlocks and their application in preventing unsafe conditions. •	• Conduct practical risk assessments for specific industrial automation systems. • Propose and implement risk mitigation measures, considering both technical and procedural solutions. • Develop safety system designs for automated processes based on identified hazards and risks. • Utilize safety PLCs (Programmable Logic Controllers) and other safety-rated components in system architecture. • Implement safety measures such as emergency stops, safety gates, and light curtains in automated systems. • Program safety logic in PLCs to respond effectively to abnormal conditions. • Conduct practical validation and verification tests to ensure the effectiveness of safety systems. • Use simulation tools and test scenarios to validate the response of safety measures. • Generate and maintain comprehensive documentation for safety systems, including safety manuals, procedures, and reports. • Create incident reports and

	contribute to root cause analyses for safety-related events. • Collaborate with automation engineers, maintenance personnel, and production teams to integrate safety measures seamlessly. • Facilitate training sessions to ensure all stakeholders understand and adhere to safety protocols. • Demonstrate steps to establish mechanisms for ongoing monitoring and evaluation of safety performance. • Propose and implement improvements to safety systems based on lessons learned from incidents and near-misses.
Classroom Aids	
Computer, Projection Equipment, PowerPoint Presentation and Software, Facilitator's Guide, Participant's Handbook.	
Tools, Equipment and Other Requirements	
PLC , HMI , Sensors and Actuators ,Safety PLC ,Safety Devices ,Variable Frequency Drives ,Industrial Robots ,Lockout/Tagout Kits ,Personal Protective Equipment	

Module 3: Identify hazards, develop safety standards and protocol

Bridge Module, Mapped to CSC/N0527 v1.0

Terminal Outcomes:

- Develop a detailed risk assessment document outlining the likelihood and severity of identified hazards.
- Apply industry-standard risk assessment methodologies to quantify and prioritize risks.
- Formulate robust safety protocols tailored to the specific needs of industrial automation within the capital goods industry.
- Create guidelines for safe equipment operation, emergency response, and preventive maintenance procedures.

Duration: 30:00	**Duration: 60:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the principles of risk assessment, including the identification, evaluation, and prioritization of potential hazards in industrial automation processes. • Discuss about existing safety protocols and standards relevant to industrial automation, ensuring a comprehensive understanding of industry best practices. • Describe how to collaborate with engineering teams to seamlessly integrate safety features into the design of control systems for industrial automation equipment. • Describe the skills to develop and maintain effective emergency response plans tailored to industrial automation systems, considering potential risks and hazards. • Discuss the use of effective communication and collaboration skills to work with engineering teams and stakeholders, ensuring the incorporation of safety measures in the design and operation of industrial automation processes.	• Perform comprehensive risk assessments for industrial automation processes, identifying potential hazards and assessing their severity and likelihood. • Demonstrate practical skills in developing and implementing risk mitigation strategies, actively reducing or eliminating identified hazards in industrial automation environments. • Participate in the design and specification of safety systems, applying theoretical knowledge to practically implement safety features in industrial automation equipment. • Demonstrate the ability to create and enforce safety protocols and procedures for the operation of industrial automation machinery, ensuring a secure working environment. • Demonstrate the ability to train personnel on safety practices, providing effective communication and education on the importance of following safety protocols consistently. • Conduct regular safety audits and inspections of industrial facilities,

	applying practical skills to identify and address potential safety issues. • Show how to collaborate with relevant stakeholders to rectify safety deficiencies, applying problem-solving skills to address issues identified during safety audits and inspections. • Demonstrate the ability to organize and conduct periodic emergency drills for industrial automation systems, ensuring that personnel are trained and competent in emergency procedures.
Classroom Aids	
Computer, Projection Equipment, PowerPoint Presentation and Software, Facilitator's Guide, Participant's Handbook.	
Tools, Equipment and Other Requirements	
PLC , HMI , Sensors and Actuators ,Safety PLC ,Safety Devices ,Variable Frequency Drives ,Industrial Robots ,Lockout/Tagout Kits ,Personal Protective Equipment	

Module 4: Carry out designing of safety testing measures

Bridge Module, Mapped to CSC/N0528 v1.0

Terminal Outcomes:

- Successful development and implementation of comprehensive safety protocols for industrial automation systems in capital goods manufacturing.
- Implementation of comprehensive training programs to educate employees about safety practices in industrial automation.
- Development and implementation of effective emergency response plans, including evacuation procedures and crisis management strategies.

Duration: 35:00	**Duration: 55:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss the importance of cross-functional collaboration in ensuring a holistic safety approach. • Explain the impact of collaborative efforts on overall safety in industrial automation processes. • Elaborate the significance of clear and concise communication in promoting safety. • Gain knowledge of contemporary safety best practices and emerging safety technologies in industrial automation. • Develop instructional design skills to create engaging and effective safety training programs. • Describe the role of leadership in shaping a safety-conscious culture. • Discuss the impact of individual and collective behavior on the overall safety culture.	• Demonstrate the ability to inspect and assess the functionality of emergency shutdown systems. • Practice skills to troubleshoot and address issues related to emergency shutdown systems. • Implement preventive maintenance measures to ensure continuous reliability. • conduct safety training programs for automation personnel, emphasizing collaboration and shared responsibility. • Demonstrate the ability to tailor communication to different audiences within the organization. • Conduct practical tests on emergency shutdown systems to validate their effectiveness. • Implement strategies for ongoing employee education to ensure awareness and adherence to safety standards. • Organize and participate in emergency drills and simulations, demonstrating the ability to coordinate a safe and efficient response. • Implement a regular maintenance schedule for these systems, including documentation of procedures and outcomes. • Practice skills to analyze test results and make necessary adjustments to enhance system performance. • Systematically identify and analyze potential hazards within an industrial automation environment, proposing practical mitigation strategies. • Integrate safety measures seamlessly into the design and implementation phases of industrial automation projects.

	• Communicate safety-related information effectively to diverse stakeholders, ensuring a clear understanding of safety protocols. • Implement a continuous improvement process for safety practices, utilizing feedback and lessons learned from incidents or near misses. • Utilize collaborative technologies and tools to enhance communication and coordination in the implementation of safety practices.
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
PLC , HMI , Sensors and Actuators ,Safety PLC ,Safety Devices ,Variable Frequency Drives ,Industrial Robots ,Lockout/Tagout Kits ,Personal Protective Equipment	

Module 5: Implement safety testing measures to prevent accident/injury

Bridge Module, Mapped to CSC/N0529 v1.0

Terminal Outcomes:

- Demonstrate an understanding of Safety Regulations and Standards .
- Describe different risk assessment methodologies.
- Discuss principles of safety system design including redundancy, fault tolerance, and fail-safe/fail-secure mechanisms.
- Demonstrate various safety testing techniques such as fault injection, failure mode simulation, and stress testing.
-

Duration: 25:00	**Duration: 35:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain key safety regulations and standards relevant to industrial automation systems (e.g., ISO 13849, IEC 61508). • Discuss regulatory requirements for safety testing and compliance in industrial environments. • Describe different risk assessment methodologies such as HAZOP (Hazard and Operability Study), FMEA (Failure Mode and Effects Analysis), and SIL (Safety Integrity Level) analysis. • Discuss the application of risk assessment techniques to identify potential hazards and assess the severity and likelihood of accidents in industrial automation systems. • Describe the principles of safety system design including redundancy, fault tolerance, and fail-safe/fail-secure mechanisms. • Explain the concept of functional safety and the importance of safety integrity levels (SIL) in ensuring system reliability. • Explain various safety testing techniques such as fault injection, failure mode simulation, and stress testing. • Describe human factors considerations in industrial automation safety design, including operator interface design and ergonomic considerations. • Explain procedures for emergency response and incident management in the event of safety-critical failures or accidents.	• Perform safety audits of industrial automation systems to identify potential hazards and assess compliance with safety regulations and standards. • Generate reports outlining findings and recommendations for addressing identified safety issues. • Design and implement safety control measures such as safety interlocks, light curtains, and emergency stop systems to mitigate identified risks. • Configure safety PLCs and safety-rated components to achieve the desired safety integrity levels. • Develop test plans and procedures for testing safety-critical components and systems. • Conduct functional testing, performance testing, and reliability testing of safety systems to ensure they meet specified safety requirements. • Diagnose faults and failures in safety systems using diagnostic tools, fault trees, and root cause analysis techniques. • Troubleshoot safety-related issues and implement corrective actions to restore system functionality and integrity. • Collaborate with engineers, technicians, and safety professionals across different departments to integrate safety considerations into the design and operation of industrial automation systems. • Participate in interdisciplinary teams to

	address safety-related challenges and implement effective safety solutions. • Develop training materials and conduct training sessions for employees on safety procedures, protocols, and best practices. • Promote awareness of safety regulations and standards and provide guidance on safe work practices to prevent accidents and injuries. • Monitor the performance of safety systems and processes through data analysis and performance metrics. • Identify opportunities for continuous improvement in safety testing methodologies, safety system design, and safety culture within the organization.,
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
PLC , HMI , Sensors and Actuators ,Safety PLC ,Safety Devices ,Variable Frequency Drives ,Industrial Robots ,Lockout/Tagout Kits ,Personal Protective Equipment	

Module 6: Collaborate and coordinate with Team

Bridge module,Mapped to CSC/N1339 v1.0

Terminal Outcomes:

- Create a collaborative and inclusive team environment conducive to effective communication and cooperation.
- Work cooperatively with team members, fostering a positive and productive atmosphere that contributes to achieving team goals.

Duration: 35:00	**Duration: 55:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Define and explain the key concepts of team dynamics, including roles, norms, and communication patterns. • Discuss the importance of applying effective communication strategies within a team, considering various communication channels and styles. • Describe the components necessary for creating a positive and productive team environment in the context of a Data Analytics Engineer role. • Describe the importance of collaboration in the field of data analytics. • Define the role of each team member in the decision-making process. • Define and demonstrate a sense of responsibility in the context of a Data Analytics Engineer.	• Conduct a practical team-building exercise to foster collaboration and teamwork. • Demonstrate the experience and identify strategies for building a cohesive team environment. • Participate in a communication simulation, considering various scenarios encountered in a data analytics team. • Receive feedback on communication effectiveness and adapt communication styles accordingly. • Work on a collaborative data analytics project, addressing real-world challenges. • Demonstrate the ability to effectively collaborate with team members to achieve project objectives. • Simulate decision-making scenarios specific to data analytics projects. • Contribute actively to decision-making processes and analyze the impact of decisions on project outcomes. • Take on specific responsibilities within the team, such as project management or task ownership. • Demonstrate a proactive approach to fulfilling responsibilities and meeting project deadlines. • Attend a diversity training workshop to gain insights into respecting diverse opinions, customs, and preferences. • Apply the knowledge gained to enhance collaboration within the team, considering cultural and professional diversity.
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	

Tools, Equipment and Other Requirements
PLC , HMI , Sensors and Actuators ,Safety PLC ,Safety Devices ,Variable Frequency Drives ,Industrial Robots ,Lockout/Tagout Kits ,Personal Protective Equipment

Module 7: Health and safety Practices

Bridge module,Mapped to CSC/N0505 v1.0

Terminal Outcomes:

- Demonstrate ways to maintain personal health and safety.
- Describe the process of assisting in hazard management.
- Explain how to check the first aid box, firefighting and safety equipment.
- Describe the process of assisting in waste management.
- Explain the importance of following the fire safety guidelines.
- Explain the importance of following the emergency and first-aid procedures.
- Demonstrate the process of carrying out relevant documentation and review.

Duration: 10:00	**Duration**: 20:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**

• lain the recommended practicesto be followed to ensure protection from infections and transmission to others, such as the use of hand sanitizer and face mask. • Explain the importance and process of checking the work conditions, assessing the potential health and safety risks, and take appropriate measures to mitigate them. • Explain the importance and process of selecting and using the appropriate PPE relevant to the task and work conditions. • Explain the recommended techniques to be followed while lifting and moving heavy objects to avoid injury. • Explain the importance of following the manufacturer's instructions and workplace safety guidelines while working on heavy machinery, tools and equipment. • Explain the importance and process of identifying existing and potential hazards at work. • Describe the process of assessing the potential risks and injuries associated with the various hazards. • Explain how to prevent or minimise different types of hazards.	• Demonstrate the use of appropriate Personal Protective Equipment (PPE) relevant to the task and work conditions. • Demonstrate how to handle hazardous materials safely. • Demonstrate the process of testing the firefighting and various safety equipment to ensure they are in usable condition. • Demonstrate the process of recycling and disposing different types of waste appropriately. • Demonstrate how to use the appropriate type of fire extinguisher to extinguish different types of fires safely. • Demonstrate how to administer appropriate first aid to the injured personnel. • Demonstrate the process of performing Cardiopulmonary Resuscitation (CPR) on a potential victim of cardiac arrest. • Demonstrate the process of carrying out appropriate documentation following a health and safety incident at work, including all the required information.

• Explain how to handle and store hazardous materials safely. • Explain the importance of ensuring the first aid box is updated with the relevant first aid supplies. • Describe the process of checking and testing the firefighting and various safety equipment to ensure they are in a usable condition. • Explain the criteria for segregating waste into appropriate categories. • Describe the appropriate methods for recycling the recyclable waste. • Describe the process of disposing of the non-recyclable waste safely and the applicable regulations. • Explain the use of different types of fire extinguishers to extinguish different types of fires. • State the recommended practices to be followed for a safe rescue during a fire emergency. • Explain how to request assistance from the fire department to extinguish a serious fire. • Explain the appropriate practices to be followed during workplace emergencies to ensure safety and minimise loss to organisational property. • State the common health and safety hazards present in a work environment, associated risks, and how to mitigate them. • State the safe working practices to be followed while working at various hazardous sites and using electrical equipment. • Explain the importance of ensuring easy access to firefighting and safety equipment. • Explain the appropriate preventative and remedial actions to be taken in the case of exposure to toxic materials, such as poisonous	

chemicals and gases. • Explain various causes of fire in different work environments and the recommended precautions to be taken to prevent fire accidents. • Describe different methods of extinguishing fire. • List different materials used for extinguishing fire. • Explain the applicable rescue techniques to be followed during a fire emergency. • Explain the importance of placing safety signs and instructions at strategic locations in a workplace and following them. • Explain different types of first aid treatment to be provided for different types of injuries. • State the potential injuries associated with incorrect manual handling. • Explain how to move an injured person safely. • State various hazards associated with the use of various machinery, tools, implements, equipment and materials. • Explain the importance of ensuring no obstruction and free access to fire exits. • Explain how to free a person from electrocution safely. • Explain how to administer appropriate first aid to an injured person. • Explain how to perform Cardiopulmonary Resuscitation (CPR). • Explain the importance of coordinating with the emergency services to request urgent medical assistance for persons requiring professional medical attention or hospitalisation. • State the appropriate documentation	

to be carried out following a health and safety incident at work, and the relevant information to be included. • Explain the importance and process of reviewing the health and safety conditions at work regularly or following an incident. • Explain the importance and process of implementing appropriate changes to improve the health and safety conditions at work.	
Classroom Aids	
Computer, Projection Equipment, PowerPoint Presentation and Software, Facilitator's Guide, Participant's Handbook.	
Tools, Equipment and Other Requirements	
Personal Protective Equipment, Cleaning Equipment and Materials, Sanitizer, Soap, Mask	

Module 8: Employability Skills

Bridge module,Mapped to DGT/VSQ/N0102 -Employability Skills (60 hours) v1.0

Terminal Outcomes:

- Discuss the Employability Skills required for jobs in various industries
- Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, caring and respecting others that are required to become a responsible citizen
- Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan

Duration: *20:00*	**Duration**: *40:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss the Employability Skills required for jobs in various industries • List different learning and employability related GOI and private portals and their usage • Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, caring and respecting others that are required to become a responsible citizen • Discuss importance of relevant 21st century skills. • Describe the benefits of continuous learning. • Explain the importance of active listening for effective communication • Discuss the significance of working collaboratively with others in a team • Discuss the significance of escalating sexual harassment issues as per POSH act. • List the common components of salary and compute income, expenditure, taxes, investments etc. • Discuss the legal rights, laws, and aids • Describe the role of digital technology in today's life • Discuss the significance of displaying responsible online behaviour while browsing, using various social media	• Practice different environmentally sustainable practices. • Exhibit 21st century skills like Self-Awareness, Behaviour 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. • Demonstrate 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 • Create a career development plan with well-defined short- and long-term goals • Communicate effectively using verbal and nonverbal communication etiquette. • Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD • 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 • Operate digital devices and use the

platforms, e-mails, etc., safely and securely • 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 • Detail the significance of analyzing different types and needs of customers • Explain the significance of identifying customer needs and responding to them in a professional manner. • Discuss the significance of maintaining hygiene and dressing appropriately • Explain the significance of maintaining hygiene and confidence during an interview • List the steps for searching and registering for apprenticeship opportunities	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 • Devise a sample business plan, for the selected business opportunity • 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:	
PPT, Laptop, White Board, Marker, Projector & Screen, Audio-visual, Chart paper, telephone connection, landline phone, and other required stationery.	
Tools, Equipment and Other Requirements	
Computer (PC) with latest configurations – and Internet connection with standard operating system and standard word processor and worksheet software (Licensed) (all software should either be latest version or one/two version below), Scanner cum Printer	

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
Degree	Degree in Electrical/ Mechatronics/ Mechanical Engineering	7		0		Practical skills and knowledge required in the relevant field

Trainer Certification	
Domain Certification	**Platform Certification**
Certified for Job Role: "**Industrial automation safety engineer**"mapped to QP: "CSC/Q0416, v1.0". Minimum accepted score is 80%	Recommended that the Trainer is certified for the Job Role: "Trainer(VET and skills)", mapped to the Qualification Pack: "MEP/Q2601 V3.0". Minimum accepted as per respective SSC guidelines is 80%.

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training/Assessment Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
Degree	Degreein Electrical/ Mechatronics/ Mechanical Engineering	7		0		Practical skills and knowledge required in the relevant field

Assessor Certification	
Domain Certification	**Platform Certification**
Certified for Job Role: "**Industrial automation safety engineer**"mapped to QP: "CSC/Q0416, v1.0". Minimum accepted score is 80%	Recommended that the assessor is certified for the Job Role: "Assessor(VET and skills)", mapped to the Qualification Pack: "MEP/Q2701, v3.0", with a minimum score of 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
   - The assessment agency deploys the ToA certified Assessor for executing the assessment
   - SSC monitors the assessment process & records
2. Testing Environment

   To ensure a conducive environment for conducting a test, the trainer will:
   - 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 10 a.m. and 5 p.m. respectively
   - Ensure there are 2 Assessors if the batch size is more than 30.
   - 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 levels 1 to 3 are for the unskilled & semi-skilled individuals, and levels 4 and above are for the skilled, supervisor & higher management
   - The assessor must be ToA certified and the trainer must be ToT Certified
   - The 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:

   To verify the details submitted by the training centre, the assessor will undertake:
   - A surprise visit to the assessment location
   - A random audit of the batch
   - A random audit of any candidate
6. Method for assessment documentation, archiving, and access

   To protect the assessment papers and information, the assessor will ensure:
   - 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 on the Hard drive

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	The 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
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	The 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

Term	Description
NOS	National Skills Qualification Committee
NSQF	National Skills Qualification Framework
OJT	On-the-Job Training
OMR	Optical Mark Recognition
PC	Performance Criteria
PwD	Persons with Disabilities
QP	Qualification Pack
SDMS	Skill Development & Management System
SIP	Skill India Portal
SSC	Sector Skill Council
TC	Trainer Certificate
ToA	Training of Assessors
ToT	Training of Trainers
TP	Training Provider