Qualification Pack

Industrial Automation Safety Engineer

QP Code: CSC/Q0416

Version: 1.0

NSQF Level: 5.5

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CSC/Q0416: Industrial Automation Safety Engineer

Brief Job Description

As an Industrial Automation Safety Engineer in the capital goods sector, the candidate's primary role is to ensure the safety and reliability of automated systems used in said manufacturing related processes. The individual will be responsible for assessing risks, implementing safety measures, and integrating safety protocols within industrial automation systems. Collaborating with cross-functional teams, you will contribute to the design and maintenance of safe manufacturing environments, adhering to industry standards and regulations.

Personal Attributes

An industrial and automation safety engineer embodies a meticulous attention to detail, ensuring that safety protocols are rigorously implemented and adhered to within industrial environments. With a keen analytical mindset, they identify potential hazards and develop comprehensive safety strategies to mitigate risks effectively. Strong communication skills enable them to convey safety procedures clearly to workers and collaborate with cross-functional teams to integrate safety measures seamlessly into automation processes.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. CSC/N0526: Ensure safety of automated system
2. CSC/N0527: Identify hazards, develop safety standards and protocol
3. CSC/N0528: Design safety testing measures
4. CSC/N0529: Implement safety testing measures to prevent accident/injury
5. CSC/N1339: Collaboratively coordinate with the team
6. CSC/N0505: Follow health, safety and environment guidelines at workplace
7. DGT/VSQ/N0102: Employability Skills (60 Hours)

Qualification Pack (QP) Parameters

Sector	Capital Goods

Qualification Pack

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, Fire-Fighting & Safety Equipment, Homeland Security
Occupation	Design
Country	India
NSQF Level	5.5
Credits	19
Aligned to NCO/ISCO/ISIC Code	2141.25
Minimum Educational Qualification & Experience	UG in relevant field (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)
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NA
Minimum Job Entry Age	24 Years
Last Reviewed On	NA
Next Review Date	31/01/2027
NSQC Approval Date	31/01/2024
Version	1.0
Reference code on NQR	QG-5.5-CG-02044-2024-V1-CGSC
NQR Version	1

CSC/N0526: Ensure safety of automated system

Description

This unit is about ensuring safety of automated system

Scope

The scope covers the following :

- Ensure safety of automated system

Elements and Performance Criteria

Ensure safety of automated system

To be competent, the user/individual on the job must be able to:

PC1. Ensure that the automated system complies with relevant safety standards such as ISO 13849, ANSI/RIA R15.06, IEC 61508, and others applicable to the industry.

PC2. Conduct thorough risk assessments for the automated system, identifying potential hazards and implementing appropriate mitigation measures to reduce risks to an acceptable level.

PC3. Perform functional safety analysis including Failure Modes and Effects Analysis (FMEA) and Fault Tree Analysis (FTA) to identify potential failure modes and their effects on system safety.

PC4. Design safety systems such as emergency stop circuits, safety interlocks, safety PLC programming, and safety-rated motion control systems to ensure safe operation of the automated system.

PC5. Specify and implement Safety Instrumented Systems where required, ensuring that they meet the required Safety Integrity Level (SIL) according to IEC 61508 or other relevant standards.

PC6. Determine hazardous areas within the industrial environment and implement appropriate safety measures such as explosion-proof enclosures, intrinsically safe equipment, or pressurized enclosures.

PC7. Develop test procedures and protocols to verify and validate the safety functions of the automated system, ensuring that safety requirements are met throughout the system lifecycle.

PC8. Provide training to personnel operating and maintaining the automated system on safety procedures and protocols. Maintain comprehensive documentation including safety manuals, operating procedures, and maintenance logs.

PC9. Develop emergency response plans and procedures for dealing with potential safety incidents or failures of the automated system, ensuring timely and effective response to mitigate risks.

PC10. Establish a process for continuous improvement of safety performance, including regular safety audits, incident investigations, and implementation of lessons learned to enhance the safety of the automated system over time.

PC11. Foster a culture of safety within the organization by promoting awareness of safety issues, encouraging reporting of safety concerns, and recognizing and rewarding contributions to safety improvement.

PC12. Collaborate with regulatory agencies, industry organizations, and other relevant stakeholders to stay updated on safety regulations, best practices, and emerging technologies in industrial automation safety.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Understanding and complying with relevant safety regulations and standards, such as OSHA, ISO 13849, and IEC 61508, to ensure the safe design and operation of automated systems.

KU2. Conducting risk assessments to identify and mitigate potential hazards associated with automated systems, including machinery, equipment, and processes.

KU3. Knowledge of safety instrumented systems, including their design, implementation, and maintenance, to ensure the integrity of safety-critical functions.

KU4. Familiarity with safety programmable logic controllers (PLCs) and their programming languages, such as ladder logic and function block diagram (FBD), to implement safety functions in automated systems.

KU5. Conducting hazard analysis studies, such as Hazard and Operability Studies (HAZOP) and Failure Modes and Effects Analysis (FMEA), to identify and mitigate potential safety risks.

KU6. Integrating safety systems with other automation systems, such as SCADA and DCS, to ensure seamless operation and monitoring of safety-critical functions.

KU7. Understanding emergency shutdown (ESD) systems and their design principles to safely shut down processes in emergency situations.

KU8. Implementing and maintaining a functional safety management system (FSMS) to ensure the ongoing safety and reliability of automated systems.

KU9. Performing safety validation and verification activities to ensure that safety functions are implemented correctly and meet the required safety standards.

KU10. Creating and maintaining safety documentation, including safety requirements specifications (SRS) and safety integrity level (SIL) verification reports, to demonstrate compliance with safety standards.

KU11. Providing training to personnel on safety procedures and communicating safety-related information effectively throughout the organization.

KU12. Continuously improving safety systems and procedures through feedback, analysis of incidents, and implementation of corrective actions.

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. Ability to analyze complex safety issues and develop effective solutions to mitigate risks in automated systems.

GS2. Being meticulous in identifying potential safety hazards and ensuring that safety measures are implemented correctly.

GS3. Strong understanding of automation systems, PLC programming, and safety standards to design and implement safety solutions effectively.

GS4. Ability to communicate safety requirements and procedures clearly to team members and stakeholders.

GS5. Collaborating with other engineers, technicians, and stakeholders to ensure that safety standards are met.

GS6. Managing safety projects, including planning, scheduling, and resource allocation, to ensure timely implementation of safety measures.

GS7. Being able to adapt to changing safety regulations and technologies to ensure compliance and effectiveness of safety systems.

GS8. A strong commitment to safety and a proactive approach to identifying and addressing safety issues.

GS9. Ability to analyze data and trends to improve safety performance and prevent accidents.

GS10. Understanding of risk management principles to assess and mitigate safety risks in automated systems.

GS11. Being open to learning new technologies and safety practices to stay updated with industry trends and standards.

GS12. Ability to troubleshoot safety-related issues in automated systems and implement effective solutions.

GS13. Ability to build relationships and work effectively with cross-functional teams to achieve safety goals.

GS14. Ability to evaluate complex safety situations and make informed decisions to ensure the safety of personnel and equipment.

GS15. Ability to lead safety initiatives and drive a safety culture within the organization.

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Ensure safety of automated system	**30**	**70**	**-**	**-**
PC1. Ensure that the automated system complies with relevant safety standards such as ISO 13849, ANSI/RIA R15.06, IEC 61508, and others applicable to the industry.	-	-	-	-
PC2. Conduct thorough risk assessments for the automated system, identifying potential hazards and implementing appropriate mitigation measures to reduce risks to an acceptable level.	-	-	-	-
PC3. Perform functional safety analysis including Failure Modes and Effects Analysis (FMEA) and Fault Tree Analysis (FTA) to identify potential failure modes and their effects on system safety.	-	-	-	-
PC4. Design safety systems such as emergency stop circuits, safety interlocks, safety PLC programming, and safety-rated motion control systems to ensure safe operation of the automated system.	-	-	-	-
PC5. Specify and implement Safety Instrumented Systems where required, ensuring that they meet the required Safety Integrity Level (SIL) according to IEC 61508 or other relevant standards.	-	-	-	-
PC6. Determine hazardous areas within the industrial environment and implement appropriate safety measures such as explosion-proof enclosures, intrinsically safe equipment, or pressurized enclosures.	-	-	-	-
PC7. Develop test procedures and protocols to verify and validate the safety functions of the automated system, ensuring that safety requirements are met throughout the system lifecycle.	-	-	-	-
PC8. Provide training to personnel operating and maintaining the automated system on safety procedures and protocols. Maintain comprehensive documentation including safety manuals, operating procedures, and maintenance logs.	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC9. Develop emergency response plans and procedures for dealing with potential safety incidents or failures of the automated system, ensuring timely and effective response to mitigate risks.	-	-	-	-
PC10. Establish a process for continuous improvement of safety performance, including regular safety audits, incident investigations, and implementation of lessons learned to enhance the safety of the automated system over time.	-	-	-	-
PC11. Foster a culture of safety within the organization by promoting awareness of safety issues, encouraging reporting of safety concerns, and recognizing and rewarding contributions to safety improvement.	-	-	-	-
PC12. Collaborate with regulatory agencies, industry organizations, and other relevant stakeholders to stay updated on safety regulations, best practices, and emerging technologies in industrial automation safety.	-	-	-	-
NOS Total	**30**	**70**	**-**	**-**

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National Occupational Standards (NOS) Parameters

NOS Code	CSC/N0526
NOS Name	Ensure safety of automated system
Sector	Capital Goods
Sub-Sector	Machine Tools, Dies, Moulds and Press Tools, Plastics Manufacturing Machinery, Textile Manufacturing Machinery, Process Plant Machinery
Occupation	Service
NSQF Level	5.5
Credits	2
Version	1.0
Last Reviewed Date	31/01/2024
Next Review Date	31/01/2027
NSQC Clearance Date	31/01/2024

CSC/N0527: Identify hazards, develop safety standards and protocol

Description

Identifying hazards involves conducting thorough risk assessments of automated systems to pinpoint potential safety risks. Developing safety standards and protocols entails creating guidelines and procedures to mitigate identified hazards and ensure compliance with relevant safety regulations. This role requires a deep understanding of safety principles, regulations, and technical aspects of automation systems to create effective safety measures.

Scope

The scope covers the following :

- The scope of this NOS includes assessing safety risks in automated systems, developing comprehensive safety standards and protocols, and ensuring compliance with relevant regulations. It involves working closely with cross-functional teams to implement and monitor safety measures. The role also encompasses conducting regular audits and reviews to identify and address any safety gaps. Additionally, it involves staying updated with industry trends and technological advancements to enhance safety practices continuously.

Elements and Performance Criteria

Identify hazards, develop safety standards and protocol

To be competent, the user/individual on the job must be able to:

PC1. conduct thorough risk assessments for industrial automation processes and identify potential hazards

PC2. develop and implement risk mitigation strategies to reduce or eliminate identified hazards

PC3. participate in the design and specification of safety systems for industrial automation equipment

PC4. collaborate with engineering teams to integrate safety features into the design of control systems

PC5. develop and enforce safety protocols and procedures for operating industrial automation machinery

PC6. train personnel on safety practices and ensure that they are followed consistently

PC7. conduct regular safety audits and inspections of industrial facilities to identify and address safety issues

PC8. collaborate with relevant stakeholders to rectify safety deficiencies

PC9. develop and maintain emergency response plans for industrial automation systems

PC10. ensure that personnel are trained in emergency procedures and conduct periodic drills

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Understanding and complying with relevant safety regulations and standards, such as OSHA, ISO 13849, and IEC 61508, to ensure the safe design and operation of automated systems.

KU2. Conducting risk assessments to identify and mitigate potential hazards associated with automated systems, including machinery, equipment, and processes.

KU3. Knowledge of safety instrumented systems, including their design, implementation, and maintenance, to ensure the integrity of safety-critical functions.

KU4. Familiarity with safety programmable logic controllers (PLCs) and their programming languages, such as ladder logic and function block diagram (FBD), to implement safety functions in automated systems.

KU5. Conducting hazard analysis studies, such as Hazard and Operability Studies (HAZOP) and Failure Modes and Effects Analysis (FMEA), to identify and mitigate potential safety risks.

KU6. Integrating safety systems with other automation systems, such as SCADA and DCS, to ensure seamless operation and monitoring of safety-critical functions.

KU7. Understanding emergency shutdown (ESD) systems and their design principles to safely shut down processes in emergency situations.

KU8. Implementing and maintaining a functional safety management system (FSMS) to ensure the ongoing safety and reliability of automated systems.

KU9. Performing safety validation and verification activities to ensure that safety functions are implemented correctly and meet the required safety standards.

KU10. Creating and maintaining safety documentation, including safety requirements specifications (SRS) and safety integrity level (SIL) verification reports, to demonstrate compliance with safety standards.

KU11. Providing training to personnel on safety procedures and communicating safety-related information effectively throughout the organization.

KU12. Continuously improving safety systems and procedures through feedback, analysis of incidents, and implementation of corrective actions.

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. Ability to analyze complex safety issues and develop effective solutions to mitigate risks in automated systems.

GS2. Being meticulous in identifying potential safety hazards and ensuring that safety measures are implemented correctly.

GS3. Strong understanding of automation systems, PLC programming, and safety standards to design and implement safety solutions effectively.

GS4. Ability to communicate safety requirements and procedures clearly to team members and stakeholders.

GS5. Collaborating with other engineers, technicians, and stakeholders to ensure that safety standards are met.

GS6. Managing safety projects, including planning, scheduling, and resource allocation, to ensure timely implementation of safety measures.

GS7. Being able to adapt to changing safety regulations and technologies to ensure compliance and effectiveness of safety systems.

GS8. A strong commitment to safety and a proactive approach to identifying and addressing safety issues.

GS9. Ability to analyze data and trends to improve safety performance and prevent accidents.

GS10. Understanding of risk management principles to assess and mitigate safety risks in automated systems.

GS11. Being open to learning new technologies and safety practices to stay updated with industry trends and standards.

GS12. Ability to troubleshoot safety-related issues in automated systems and implement effective solutions.

GS13. Ability to build relationships and work effectively with cross-functional teams to achieve safety goals.

GS14. Ability to evaluate complex safety situations and make informed decisions to ensure the safety of personnel and equipment.

GS15. Ability to lead safety initiatives and drive a safety culture within the organization.

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Identify hazards, develop safety standards and protocol	**30**	**70**	**-**	**-**
PC1. conduct thorough risk assessments for industrial automation processes and identify potential hazards	-	-	-	-
PC2. develop and implement risk mitigation strategies to reduce or eliminate identified hazards	-	-	-	-
PC3. participate in the design and specification of safety systems for industrial automation equipment	-	-	-	-
PC4. collaborate with engineering teams to integrate safety features into the design of control systems	-	-	-	-
PC5. develop and enforce safety protocols and procedures for operating industrial automation machinery	-	-	-	-
PC6. train personnel on safety practices and ensure that they are followed consistently	-	-	-	-
PC7. conduct regular safety audits and inspections of industrial facilities to identify and address safety issues	-	-	-	-
PC8. collaborate with relevant stakeholders to rectify safety deficiencies	-	-	-	-
PC9. develop and maintain emergency response plans for industrial automation systems	-	-	-	-
PC10. ensure that personnel are trained in emergency procedures and conduct periodic drills	-	-	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	CSC/N0527
NOS Name	Identify hazards, develop safety standards and protocol
Sector	Capital Goods
Sub-Sector	Machine Tools, Dies, Moulds and Press Tools, Plastics Manufacturing Machinery, Textile Manufacturing Machinery, Process Plant Machinery
Occupation	Service
NSQF Level	5.5
Credits	4
Version	1.0
Last Reviewed Date	31/01/2024
Next Review Date	31/01/2027
NSQC Clearance Date	31/01/2024

CSC/N0528: Design safety testing measures

Description

Designing safety testing measures involves developing procedures to test the effectiveness of safety systems in automated environments. This includes creating test plans, protocols, and documentation to ensure compliance with safety standards. The role requires collaborating with engineers and technicians to conduct tests and analyze results. It also involves identifying and addressing any safety issues or deficiencies found during testing. Continuous improvement of safety testing methods is essential to enhance the overall safety of automated systems.

Scope

The scope covers the following :

- The scope of this NOS includes designing testing procedures to evaluate the effectiveness of safety systems in automated environments. This involves developing test plans, protocols, and documentation to ensure compliance with safety standards. The role requires collaborating with engineers and technicians to conduct tests and analyze results.

Elements and Performance Criteria

Incident investigation and improvisation

To be competent, the user/individual on the job must be able to:

PC1. investigate and analyze incidents related to safety, identifying root causes, and implementing corrective actions

PC2. maintain incident records and use them to improve safety measures

PC3. maintain accurate documentation of safety procedures, risk assessments, and safety system designs

PC4. generate regular reports on safety performance and present findings to management

PC5. implement continuous improvement initiatives to enhance the overall safety of industrial automation systems

PC6. stay informed about new safety technologies and methodologies

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Understanding and complying with relevant safety regulations and standards, such as OSHA, ISO 13849, and IEC 61508, to ensure the safe design and operation of automated systems.

KU2. Conducting risk assessments to identify and mitigate potential hazards associated with automated systems, including machinery, equipment, and processes.

KU3. Knowledge of safety instrumented systems, including their design, implementation, and maintenance, to ensure the integrity of safety-critical functions.

KU4. Familiarity with safety programmable logic controllers (PLCs) and their programming languages, such as ladder logic and function block diagram (FBD), to implement safety functions in automated systems.

KU5. Conducting hazard analysis studies, such as Hazard and Operability Studies (HAZOP) and Failure Modes and Effects Analysis (FMEA), to identify and mitigate potential safety risks.

KU6. Integrating safety systems with other automation systems, such as SCADA and DCS, to ensure seamless operation and monitoring of safety-critical functions.

KU7. Understanding emergency shutdown (ESD) systems and their design principles to safely shut down processes in emergency situations.

KU8. Implementing and maintaining a functional safety management system (FSMS) to ensure the ongoing safety and reliability of automated systems.

KU9. Performing safety validation and verification activities to ensure that safety functions are implemented correctly and meet the required safety standards.

KU10. Creating and maintaining safety documentation, including safety requirements specifications (SRS) and safety integrity level (SIL) verification reports, to demonstrate compliance with safety standards.

KU11. Providing training to personnel on safety procedures and communicating safety-related information effectively throughout the organization.

KU12. Continuously improving safety systems and procedures through feedback, analysis of incidents, and implementation of corrective actions.

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. Ability to analyze complex safety issues and develop effective solutions to mitigate risks in automated systems.

GS2. Being meticulous in identifying potential safety hazards and ensuring that safety measures are implemented correctly.

GS3. Strong understanding of automation systems, PLC programming, and safety standards to design and implement safety solutions effectively.

GS4. Ability to communicate safety requirements and procedures clearly to team members and stakeholders.

GS5. Collaborating with other engineers, technicians, and stakeholders to ensure that safety standards are met.

GS6. Managing safety projects, including planning, scheduling, and resource allocation, to ensure timely implementation of safety measures.

GS7. Being able to adapt to changing safety regulations and technologies to ensure compliance and effectiveness of safety systems.

GS8. A strong commitment to safety and a proactive approach to identifying and addressing safety issues.

GS9. Ability to analyze data and trends to improve safety performance and prevent accidents.

GS10. Understanding of risk management principles to assess and mitigate safety risks in automated systems.

GS11. Being open to learning new technologies and safety practices to stay updated with industry trends and standards.

GS12. Ability to troubleshoot safety-related issues in automated systems and implement effective solutions.

GS13. Ability to build relationships and work effectively with cross-functional teams to achieve safety goals.

GS14. Ability to evaluate complex safety situations and make informed decisions to ensure the safety of personnel and equipment.

GS15. Ability to lead safety initiatives and drive a safety culture within the organization.

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Incident investigation and improvisation	**30**	**70**	**-**	**-**
PC1. investigate and analyze incidents related to safety, identifying root causes, and implementing corrective actions	-	-	-	-
PC2. maintain incident records and use them to improve safety measures	-	-	-	-
PC3. maintain accurate documentation of safety procedures, risk assessments, and safety system designs	-	-	-	-
PC4. generate regular reports on safety performance and present findings to management	-	-	-	-
PC5. implement continuous improvement initiatives to enhance the overall safety of industrial automation systems	-	-	-	-
PC6. stay informed about new safety technologies and methodologies	-	-	-	-
NOS Total	**30**	**70**	**-**	**-**

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National Occupational Standards (NOS) Parameters

NOS Code	CSC/N0528
NOS Name	Design safety testing measures
Sector	Capital Goods
Sub-Sector	Machine Tools, Dies, Moulds and Press Tools, Plastics Manufacturing Machinery, Textile Manufacturing Machinery, Process Plant Machinery
Occupation	Service
NSQF Level	5.5
Credits	4
Version	1.0
Last Reviewed Date	31/01/2024
Next Review Date	31/01/2027
NSQC Clearance Date	31/01/2024

CSC/N0529: Implement safety testing measures to prevent accident/injury

Description

Implementing safety testing measures to prevent accidents/injuries involves executing procedures to test the effectiveness of safety systems in automated environments. This includes following test plans, protocols, and documentation to ensure compliance with safety standards. The role requires collaboration with engineers and technicians to conduct tests and analyze results.

Scope

The scope covers the following :

- The scope of this NOS includes implementing safety testing measures to prevent accidents and injuries in automated environments. This involves following test procedures, collaborating with team members, and analyzing test results. The role requires taking corrective actions based on test findings to improve safety measures continuously. It also involves ensuring compliance with safety standards and contributing to the overall safety culture of the organization.

Elements and Performance Criteria

Collaboration and implementation of safety practices

To be competent, the user/individual on the job must be able to:

PC1. collaborate with cross-functional teams, including engineers, operators, and management, to ensure a comprehensive approach to safety

PC2. communicate effectively with all stakeholders regarding safety policies, procedures, and updates

PC3. provide ongoing training to employees on safety best practices and new safety technologies

PC4. promote a safety-conscious culture within the organization

PC5. ensure the proper functioning and reliability of emergency shutdown systems in industrial automation processes

PC6. test and maintain these systems regularly to guarantee their effectiveness in case of emergencies

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Understanding and complying with relevant safety regulations and standards, such as OSHA, ISO 13849, and IEC 61508, to ensure the safe design and operation of automated systems.

KU2. Conducting risk assessments to identify and mitigate potential hazards associated with automated systems, including machinery, equipment, and processes.

KU3. Knowledge of safety instrumented systems, including their design, implementation, and maintenance, to ensure the integrity of safety-critical functions.

KU4. Familiarity with safety programmable logic controllers (PLCs) and their programming languages, such as ladder logic and function block diagram (FBD), to implement safety functions in automated systems.

KU5. Conducting hazard analysis studies, such as Hazard and Operability Studies (HAZOP) and Failure Modes and Effects Analysis (FMEA), to identify and mitigate potential safety risks.

KU6. Integrating safety systems with other automation systems, such as SCADA and DCS, to ensure seamless operation and monitoring of safety-critical functions.

KU7. Understanding emergency shutdown (ESD) systems and their design principles to safely shut down processes in emergency situations.

KU8. Implementing and maintaining a functional safety management system (FSMS) to ensure the ongoing safety and reliability of automated systems.

KU9. Performing safety validation and verification activities to ensure that safety functions are implemented correctly and meet the required safety standards.

KU10. Creating and maintaining safety documentation, including safety requirements specifications (SRS) and safety integrity level (SIL) verification reports, to demonstrate compliance with safety standards.

KU11. Providing training to personnel on safety procedures and communicating safety-related information effectively throughout the organization.

KU12. Continuously improving safety systems and procedures through feedback, analysis of incidents, and implementation of corrective actions.

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. Ability to analyze complex safety issues and develop effective solutions to mitigate risks in automated systems.

GS2. Being meticulous in identifying potential safety hazards and ensuring that safety measures are implemented correctly.

GS3. Strong understanding of automation systems, PLC programming, and safety standards to design and implement safety solutions effectively.

GS4. Ability to communicate safety requirements and procedures clearly to team members and stakeholders.

GS5. Collaborating with other engineers, technicians, and stakeholders to ensure that safety standards are met.

GS6. Managing safety projects, including planning, scheduling, and resource allocation, to ensure timely implementation of safety measures.

GS7. Being able to adapt to changing safety regulations and technologies to ensure compliance and effectiveness of safety systems.

GS8. A strong commitment to safety and a proactive approach to identifying and addressing safety issues.

GS9. Ability to analyze data and trends to improve safety performance and prevent accidents.

GS10. Understanding of risk management principles to assess and mitigate safety risks in automated systems.

GS11. Being open to learning new technologies and safety practices to stay updated with industry trends and standards.

GS12. Ability to troubleshoot safety-related issues in automated systems and implement effective solutions.

GS13. Ability to build relationships and work effectively with cross-functional teams to achieve safety goals.

GS14. Ability to evaluate complex safety situations and make informed decisions to ensure the safety of personnel and equipment.

GS15. Ability to lead safety initiatives and drive a safety culture within the organization.

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Collaboration and implementation of safety practices	**30**	**70**	**-**	**-**
PC1. collaborate with cross-functional teams, including engineers, operators, and management, to ensure a comprehensive approach to safety	-	-	-	-
PC2. communicate effectively with all stakeholders regarding safety policies, procedures, and updates	-	-	-	-
PC3. provide ongoing training to employees on safety best practices and new safety technologies	-	-	-	-
PC4. promote a safety-conscious culture within the organization	-	-	-	-
PC5. ensure the proper functioning and reliability of emergency shutdown systems in industrial automation processes	-	-	-	-
PC6. test and maintain these systems regularly to guarantee their effectiveness in case of emergencies	-	-	-	-
NOS Total	**30**	**70**	**-**	**-**

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	CSC/N0529
NOS Name	Implement safety testing measures to prevent accident/injury
Sector	Capital Goods
Sub-Sector	Machine Tools, Dies, Moulds and Press Tools, Plastics Manufacturing Machinery, Textile Manufacturing Machinery, Process Plant Machinery
Occupation	Service
NSQF Level	5.5
Credits	3
Version	1.0
Last Reviewed Date	31/01/2024
Next Review Date	31/01/2027
NSQC Clearance Date	31/01/2024

CSC/N1339: Collaboratively coordinate with the team

Description

This OS unit is about building relationships and working with people and groups inside and outside the organization, using skills and habits, to achieve the team goals and objectives

Scope

The scope covers the following :

- This unit/task covers the following:
- Creating team environment
- Communicating - giving and receiving
- Working cooperatively
- Participating in team decision making
- Demonstrating Sense of Responsibility
- Showing respect for opinions, customs, and preferences

Elements and Performance Criteria

Communicate effectively at the workplace

To be competent, the user/individual on the job must be able to:

PC1. exchange information and instruction with colleagues, and seek clarifications and feedback

PC2. assist colleagues where required

PC3. follow business communication etiquette in all interactions and communicative formats (online, digital, and in-person)

PC4. document and share all relevant information with stakeholders in agreed formats and as per agreed timelines

Work effectively

To be competent, the user/individual on the job must be able to:

PC5. identify and obtain clarity regarding organisational, team and own goals and targets

PC6. prioritise and plan work in order to achieve goals and targets

PC7. monitor own and team performance as per agreed plan

PC8. complete duties accurately, systematically and within required timeframes

PC9. express emotions appropriately at the workplace and manage own response to heightened emotions

PC10. maintain orderliness and cleanliness in the work area Maintain and enhance professional competence

PC11. identify own strengths and weaknesses in relation to goals and targets

PC12. adapt self, service, or product to meet success criteria

PC13. seek and select opportunities for continuous professional development

PC14. formulate a professional development plan to enhance capabilities

PC15. build or contribute to the organizational knowledge base of cases, clients, issues, solutions, and innovations

PC16. examine developments and trends in field of work and their potential impact on work

PC17. take feedback from peers, supervisors and clients to improve own performance and practices

Work in a disciplined and ethical manner

To be competent, the user/individual on the job must be able to:

PC18. perform tasks as per workplace standards, organizational policies and legislative requirements

PC19. display appropriate professional appearance at the workplace and adhere to the organizational dress code

PC20. demonstrate responsible and disciplined behavior at the workplace such as punctuality; completing tasks as per given time and standards; demonstrating professional behavior at all times, adopting environment- friendly practices, etc.

PC21. identify the cause of conflict and options for resolution with peers or escalate grievances and problems to appropriate authority as per procedure for conflict resolution

PC22. protect the rights of the client and organization when delivering services

PC23. ensure services are delivered equally to all clients regardless of personal and cultural beliefs

PC24. operate within an agreed ethical code of practice and report unethical conduct to the appropriate authorities

PC25. follow organizational guidelines and legal requirements on disclosure and confidentiality

Uphold social diversity at the workplace

To be competent, the user/individual on the job must be able to:

PC26. recognize and evaluate biased practices against underrepresented groups like women and persons with disabilities, in workplace systems and processes

PC27. identify and report discrimination and harassment based on gender, disability, or cultural difference at the workplace

PC28. use inclusive or neutral language and gestures in all interactions

PC29. respect the personal and professional space of others

PC30. access grievance redressal mechanisms as per legislations

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. the organisation's policies and procedures for working with colleagues, roles and responsibilities

KU2. the importance of effective communication and establishing good working relationships with colleagues

KU3. different methods of communication and the circumstances in which it is appropriate to use these

KU4. the importance of creating an environment of trust and mutual respect

KU5. the implications of own work on the work and schedule of others

KU6. different types of information that colleagues might need and the importance of providing this information when it is required

KU7. the importance of helping colleagues with problems, to meet quality and time standards as a team

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. read and write instructions, guidelines, procedures, messages, emails, and other media in language of the workplace

GS2. communicate in common and technical terms in language of the workplace

GS3. listen effectively and orally communicate information

GS4. be punctual, do work scheduling and reporting

GS5. comply with workplace practices and ethics

GS6. maintain cleanliness and healthy environment

GS7. be customer friendly - understand real needs of the customer and suggest most appropriate solution

GS8. be safety conscious and avoid risk

GS9. be observant, vigilant, and security consciousness

GS10. respond, handle problem, and escalate as necessary

GS11. ask for clarification and advice from concerned persons

GS12. make decisions on a suitable course of action or response keeping in view resource utilization while meeting commitments

GS13. plan and organize work to achieve targets and deadlines

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Communicate effectively at the workplace	**7**	**20**	**-**	**-**
PC1. exchange information and instruction with colleagues, and seek clarifications and feedback	-	-	-	-
PC2. assist colleagues where required	-	-	-	-
PC3. follow business communication etiquette in all interactions and communicative formats (online, digital, and in-person)	-	-	-	-
PC4. document and share all relevant information with stakeholders in agreed formats and as per agreed timelines	-	-	-	-
Work effectively	**7**	**20**	**-**	**-**
PC5. identify and obtain clarity regarding organisational, team and own goals and targets	-	-	-	-
PC6. prioritise and plan work in order to achieve goals and targets	-	-	-	-
PC7. monitor own and team performance as per agreed plan	-	-	-	-
PC8. complete duties accurately, systematically and within required timeframes	-	-	-	-
PC9. express emotions appropriately at the workplace and manage own response to heightened emotions	-	-	-	-
PC10. maintain orderliness and cleanliness in the work area Maintain and enhance professional competence	-	-	-	-
PC11. identify own strengths and weaknesses in relation to goals and targets	-	-	-	-
PC12. adapt self, service, or product to meet success criteria	-	-	-	-
PC13. seek and select opportunities for continuous professional development	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. formulate a professional development plan to enhance capabilities	-	-	-	-
PC15. build or contribute to the organizational knowledge base of cases, clients, issues, solutions, and innovations	-	-	-	-
PC16. examine developments and trends in field of work and their potential impact on work	-	-	-	-
PC17. take feedback from peers, supervisors and clients to improve own performance and practices	-	-	-	-
Work in a disciplined and ethical manner	**8**	**20**	**-**	**-**
PC18. perform tasks as per workplace standards, organizational policies and legislative requirements	-	-	-	-
PC19. display appropriate professional appearance at the workplace and adhere to the organizational dress code	-	-	-	-
PC20. demonstrate responsible and disciplined behavior at the workplace such as punctuality; completing tasks as per given time and standards; demonstrating professional behavior at all times, adopting environment- friendly practices, etc.	-	-	-	-
PC21. identify the cause of conflict and options for resolution with peers or escalate grievances and problems to appropriate authority as per procedure for conflict resolution	-	-	-	-
PC22. protect the rights of the client and organization when delivering services	-	-	-	-
PC23. ensure services are delivered equally to all clients regardless of personal and cultural beliefs	-	-	-	-
PC24. operate within an agreed ethical code of practice and report unethical conduct to the appropriate authorities	-	-	-	-
PC25. follow organizational guidelines and legal requirements on disclosure and confidentiality	-	-	-	-
Uphold social diversity at the workplace	**8**	**10**	**-**	**-**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC26. recognize and evaluate biased practices against underrepresented groups like women and persons with disabilities, in workplace systems and processes	-	-	-	-
PC27. identify and report discrimination and harassment based on gender, disability, or cultural difference at the workplace	-	-	-	-
PC28. use inclusive or neutral language and gestures in all interactions	-	-	-	-
PC29. respect the personal and professional space of others	-	-	-	-
PC30. access grievance redressal mechanisms as per legislations	-	-	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	CSC/N1339
NOS Name	Collaboratively coordinate with the team
Sector	Capital Goods
Sub-Sector	Generic
Occupation	Generic
NSQF Level	5
Credits	3
Version	1.0
Last Reviewed Date	31/01/2024
Next Review Date	31/01/2027
NSQC Clearance Date	31/01/2024

CSC/N0505: Follow health, safety and environment guidelines at workplace

Description

This OS unit is about following adequate safety procedures to make work environment healthy and safe

Scope

The scope covers the following :

- This unit/task covers the following:
- Adhere to standard safety procedures of the company
- Follow healthy practices and posture
- Practice waste management and recycling
- Conserve material and resources

Elements and Performance Criteria

Adhere to standard safety procedures of the organisation

To be competent, the user/individual on the job must be able to:

PC1. comply with general safety procedures and those for handling equipment, tools, chemicals, and hazardous material, as prescribed and followed in the organisation

PC2. remove finger rings or any other metal objects likely to interfere with the work

PC3. ensure that identification badge or any other object worn around the neck or on the clothing does not get caught in any rotating machine, or otherwise interfere with the work

PC4. use appropriate safety devices such as goggles, gloves, ear plugs, caps, ESD pins, covers, shoes, helmets etc. recommended for the work being performed

PC5. inform, escalate, or raise alarm about any suspicions, unaccounted hazardous material, devices, or other objects found in the premises

PC6. inform, escalate, or raise alarm about any breach of safety or security procedure in the organisation

PC7. help achieve zero accidents goals at work

PC8. avoid damage to sensitive electronic components due to negligence of ESD procedures

PC9. participate regularly in fire drills or other safety related workshops organised by the organisation

PC10. follow strictly all access control and perimeter safety procedures in designated factory areas such as robotic work stations, automated production lines, automated material movement and other potentially risky operations

PC11. ensure that other people follow all access control and perimeter safety procedures in designated factory areas and help avoid accidents

PC12. use emergency switches or other mechanisms of stopping a machine immediately in case any emergency situation has developed or about to happen

PC13. ensure that electrical equipment are properly grounded

PC14. follow Cyber Security guidelines and be vigilant at workplace

PC15. proceed to designated safe assembly area immediately on hearing fire alarm

Follow healthy practices and posture

To be competent, the user/individual on the job must be able to:

PC16. wash hands and use sanitizers as recommended to prevent spread of diseases

PC17. follow common personal hygiene practices

PC18. maintain appropriate posture, especially in long hours of sitting or standing position and in handling heavy materials

PC19. participate in company organised health sessions such as exercises, games, yoga, physiotherapy, and other activities

PC20. handle heavy and hazardous materials with care, while maintaining appropriate posture, using suitable tools, and handling equipment such as trolleys, jacks, and ladders

PC21. learn and apply first aid devices available in the workplace

PC22. learn and apply safety and handling procedures for electrical shock and electrocution

PC23. learn and apply emergency medical help services

PC24. follow workplace decorum and avoid emotional outbursts or inappropriate language

PC25. prevent any harassment at workplace

Practice waste management and recycling

To be competent, the user/individual on the job must be able to:

PC26. identify recyclable, non-recyclable, and hazardous waste generated in the workplace and comply with their disposal procedures

PC27. dispose non-recyclable waste and hazardous waste following recommended processes

PC28. deposit recyclable and reusable material at identified locations

PC29. support education and compliance of waste management processes

Conserve material and resources

To be competent, the user/individual on the job must be able to:

PC30. identify ways to optimize usage of material and resources such as water, electricity, energy in various tasks, activities, and processes

PC31. check for spills and leakages of material in various tasks, activities, and processes and plug them

PC32. escalate the leakage issue to appropriate authority if needed

PC33. carry out routine cleaning of tools, machines, and equipment and maintain them in good working condition to optimize efficiency and wastage

PC34. check if the equipment is functioning normally before commencing work and rectify or report any malfunctioning to the responsible agency

PC35. check for any odour, sparks, fumes, emission, unusual vibration, noise, or any other objectionable presence in the environment and take immediate corrective action followed by report to responsible agency

PC36. ensure electrical equipment are properly connected for use and are switched off when not in use

PC37. support education and compliance of resource conservation processes

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. company policies on workplace, environment, and personnel management
KU2. company policy on occupational safety and health
KU3. professional hazards related to nature of work and how to deal with them
KU4. how to maintain the work area safe and secure
KU5. how to handle hazardous materials, tools, and equipment
KU6. emergency procedures for fire, electrocution, physical injury, wounds, etc.
KU7. need for proper body posture and use of appropriate handling equipment
KU8. understand electrical grounding practices
KU9. common sources of pollution and ways to minimize it
KU10. waste management - categorisation, colour coding, handling, and disposal procedure
KU11. organisation policies and procedures for minimizing waste
KU12. efficient use of electricity, material, and water in processes
KU13. organization policies regarding network usage and security
KU14. norms for professional behaviour at workplace and dealing with deviations

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. communicating in the language of the workplace
GS2. reading and interpreting documents, drawings, symbols, and instructions
GS3. operating computer and common office equipment and diagnosing common electrical and interconnection problems
GS4. writing notes, reports, observations, emails
GS5. using personnel protective devices
GS6. maintaining clean and healthy work environment
GS7. using and operating safety devices and equipment
GS8. conducting work following workplace security processes and rules
GS9. responding to emergency situations pertaining to workplace
GS10. understanding people and collaborating to create a healthy workplace

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Adhere to standard safety procedures of the organisation	**7**	**10**	**-**	**-**
PC1. comply with general safety procedures and those for handling equipment, tools, chemicals, and hazardous material, as prescribed and followed in the organisation	-	-	-	-
PC2. remove finger rings or any other metal objects likely to interfere with the work	-	-	-	-
PC3. ensure that identification badge or any other object worn around the neck or on the clothing does not get caught in any rotating machine, or otherwise interfere with the work	-	-	-	-
PC4. use appropriate safety devices such as goggles, gloves, ear plugs, caps, ESD pins, covers, shoes, helmets etc. recommended for the work being performed	-	-	-	-
PC5. inform, escalate, or raise alarm about any suspicions, unaccounted hazardous material, devices, or other objects found in the premises	-	-	-	-
PC6. inform, escalate, or raise alarm about any breach of safety or security procedure in the organisation	-	-	-	-
PC7. help achieve zero accidents goals at work	-	-	-	-
PC8. avoid damage to sensitive electronic components due to negligence of ESD procedures	-	-	-	-
PC9. participate regularly in fire drills or other safety related workshops organised by the organisation	-	-	-	-
PC10. follow strictly all access control and perimeter safety procedures in designated factory areas such as robotic work stations, automated production lines, automated material movement and other potentially risky operations	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. ensure that other people follow all access control and perimeter safety procedures in designated factory areas and help avoid accidents	-	-	-	-
PC12. use emergency switches or other mechanisms of stopping a machine immediately in case any emergency situation has developed or about to happen	-	-	-	-
PC13. ensure that electrical equipment are properly grounded	-	-	-	-
PC14. follow Cyber Security guidelines and be vigilant at workplace	-	-	-	-
PC15. proceed to designated safe assembly area immediately on hearing fire alarm	-	-	-	-
Follow healthy practices and posture	**8**	**10**	**-**	**-**
PC16. wash hands and use sanitizers as recommended to prevent spread of diseases	-	-	-	-
PC17. follow common personal hygiene practices	-	-	-	-
PC18. maintain appropriate posture, especially in long hours of sitting or standing position and in handling heavy materials	-	-	-	-
PC19. participate in company organised health sessions such as exercises, games, yoga, physiotherapy, and other activities	-	-	-	-
PC20. handle heavy and hazardous materials with care, while maintaining appropriate posture, using suitable tools, and handling equipment such as trolleys, jacks, and ladders	-	-	-	-
PC21. learn and apply first aid devices available in the workplace	-	-	-	-
PC22. learn and apply safety and handling procedures for electrical shock and electrocution	-	-	-	-
PC23. learn and apply emergency medical help services	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC24. follow workplace decorum and avoid emotional outbursts or inappropriate language	-	-	-	-
PC25. prevent any harassment at workplace	-	-	-	-
Practice waste management and recycling	-	-	-	-
PC26. identify recyclable, non-recyclable, and hazardous waste generated in the workplace and comply with their disposal procedures	-	-	-	-
PC27. dispose non-recyclable waste and hazardous waste following recommended processes	-	-	-	-
PC28. deposit recyclable and reusable material at identified locations	-	-	-	-
PC29. support education and compliance of waste management processes	-	-	-	-
Conserve material and resources	-	-	-	-
PC30. identify ways to optimize usage of material and resources such as water, electricity, energy in various tasks, activities, and processes	-	-	-	-
PC31. check for spills and leakages of material in various tasks, activities, and processes and plug them	-	-	-	-
PC32. escalate the leakage issue to appropriate authority if needed	-	-	-	-
PC33. carry out routine cleaning of tools, machines, and equipment and maintain them in good working condition to optimize efficiency and wastage	-	-	-	-
PC34. check if the equipment is functioning normally before commencing work and rectify or report any malfunctioning to the responsible agency	-	-	-	-
PC35. check for any odour, sparks, fumes, emission, unusual vibration, noise, or any other objectionable presence in the environment and take immediate corrective action followed by report to responsible agency	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC36. ensure electrical equipment are properly connected for use and are switched off when not in use	-	-	-	-
PC37. support education and compliance of resource conservation processes	-	-	-	-
NOS Total	**15**	**20**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	CSC/N0505
NOS Name	Follow health, safety and environment guidelines at workplace
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, Defence Equipment, Fire-Fighting & Safety Equipment, Homeland Security
Occupation	Service
NSQF Level	5
Credits	1
Version	1.0
Last Reviewed Date	31/01/2024
Next Review Date	31/01/2027
NSQC Clearance Date	31/01/2024

DGT/VSQ/N0102: Employability Skills (60 Hours)

Description

This unit is about employability skills, Constitutional values, becoming a professional in the 21st Century, digital, financial, and legal literacy, diversity and Inclusion, English and communication skills, customer service, entrepreneurship, and apprenticeship, getting ready for jobs and career development.

Scope

The scope covers the following :

- Introduction to Employability Skills
- Constitutional values - Citizenship
- Becoming a Professional in the 21st Century
- Basic English Skills
- Career Development & Goal Setting
- Communication Skills
- Diversity & Inclusion
- Financial and Legal Literacy
- Essential Digital Skills
- Entrepreneurship
- Customer Service
- Getting ready for Apprenticeship & Jobs

Elements and Performance Criteria

Introduction to Employability Skills

To be competent, the user/individual on the job must be able to:

PC1. identify employability skills required for jobs in various industries

PC2. identify and explore learning and employability portals

Constitutional values – Citizenship

To be competent, the user/individual on the job must be able to:

PC3. recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.

PC4. follow environmentally sustainable practices

Becoming a Professional in the 21st Century

To be competent, the user/individual on the job must be able to:

PC5. recognize the significance of 21st Century Skills for employment

PC6. practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life

Basic English Skills

To be competent, the user/individual on the job must be able to:

PC7. use basic English for everyday conversation in different contexts, in person and over the telephone

PC8. read and understand routine information, notes, instructions, mails, letters etc. written in English

PC9. write short messages, notes, letters, e-mails etc. in English

Career Development & Goal Setting

To be competent, the user/individual on the job must be able to:

PC10. understand the difference between job and career

PC11. prepare a career development plan with short- and long-term goals, based on aptitude

Communication Skills

To be competent, the user/individual on the job must be able to:

PC12. follow verbal and non-verbal communication etiquette and active listening techniques in various settings

PC13. work collaboratively with others in a team

Diversity & Inclusion

To be competent, the user/individual on the job must be able to:

PC14. communicate and behave appropriately with all genders and PwD

PC15. escalate any issues related to sexual harassment at workplace according to POSH Act

Financial and Legal Literacy

To be competent, the user/individual on the job must be able to:

PC16. select financial institutions, products and services as per requirement

PC17. carry out offline and online financial transactions, safely and securely

PC18. identify common components of salary and compute income, expenses, taxes, investments etc

PC19. identify relevant rights and laws and use legal aids to fight against legal exploitation

Essential Digital Skills

To be competent, the user/individual on the job must be able to:

PC20. operate digital devices and carry out basic internet operations securely and safely

PC21. use e- mail and social media platforms and virtual collaboration tools to work effectively

PC22. use basic features of word processor, spreadsheets, and presentations

Entrepreneurship

To be competent, the user/individual on the job must be able to:

PC23. identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research

PC24. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion

PC25. identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity

Customer Service

To be competent, the user/individual on the job must be able to:

PC26. identify different types of customers

PC27. identify and respond to customer requests and needs in a professional manner.

PC28. follow appropriate hygiene and grooming standards

Getting ready for apprenticeship & Jobs

To be competent, the user/individual on the job must be able to:

PC29. create a professional Curriculum vitae (Résumé)

PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively

PC31. apply to identified job openings using offline /online methods as per requirement

PC32. answer questions politely, with clarity and confidence, during recruitment and selection

PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. need for employability skills and different learning and employability related portals

KU2. various constitutional and personal values

KU3. different environmentally sustainable practices and their importance

KU4. Twenty first (21st) century skills and their importance

KU5. how to use English language for effective verbal (face to face and telephonic) and written communication in formal and informal set up

KU6. importance of career development and setting long- and short-term goals

KU7. about effective communication

KU8. POSH Act

KU9. Gender sensitivity and inclusivity

KU10. different types of financial institutes, products, and services

KU11. how to compute income and expenditure

KU12. importance of maintaining safety and security in offline and online financial transactions

KU13. different legal rights and laws

KU14. different types of digital devices and the procedure to operate them safely and securely

KU15. how to create and operate an e- mail account and use applications such as word processors, spreadsheets etc.

KU16. how to identify business opportunities

KU17. types and needs of customers

KU18. how to apply for a job and prepare for an interview

KU19. apprenticeship scheme and the process of registering on apprenticeship portal

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. read and write different types of documents/instructions/correspondence

GS2. communicate effectively using appropriate language in formal and informal settings

GS3. behave politely and appropriately with all
GS4. how to work in a virtual mode
GS5. perform calculations efficiently
GS6. solve problems effectively
GS7. pay attention to details
GS8. manage time efficiently
GS9. maintain hygiene and sanitization to avoid infection

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Introduction to Employability Skills	**1**	**1**	**-**	**-**
PC1. identify employability skills required for jobs in various industries	-	-	-	-
PC2. identify and explore learning and employability portals	-	-	-	-
Constitutional values – Citizenship	**1**	**1**	**-**	**-**
PC3. recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.	-	-	-	-
PC4. follow environmentally sustainable practices	-	-	-	-
Becoming a Professional in the 21st Century	**2**	**4**	**-**	**-**
PC5. recognize the significance of 21st Century Skills for employment	-	-	-	-
PC6. practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life	-	-	-	-
Basic English Skills	**2**	**3**	**-**	**-**
PC7. use basic English for everyday conversation in different contexts, in person and over the telephone	-	-	-	-
PC8. read and understand routine information, notes, instructions, mails, letters etc. written in English	-	-	-	-
PC9. write short messages, notes, letters, e-mails etc. in English	-	-	-	-
Career Development & Goal Setting	**1**	**2**	**-**	**-**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. understand the difference between job and career	-	-	-	-
PC11. prepare a career development plan with short- and long-term goals, based on aptitude	-	-	-	-
Communication Skills	**2**	**2**	**-**	**-**
PC12. follow verbal and non-verbal communication etiquette and active listening techniques in various settings	-	-	-	-
PC13. work collaboratively with others in a team	-	-	-	-
Diversity & Inclusion	**1**	**2**	**-**	**-**
PC14. communicate and behave appropriately with all genders and PwD	-	-	-	-
PC15. escalate any issues related to sexual harassment at workplace according to POSH Act	-	-	-	-
Financial and Legal Literacy	**2**	**3**	**-**	**-**
PC16. select financial institutions, products and services as per requirement	-	-	-	-
PC17. carry out offline and online financial transactions, safely and securely	-	-	-	-
PC18. identify common components of salary and compute income, expenses, taxes, investments etc	-	-	-	-
PC19. identify relevant rights and laws and use legal aids to fight against legal exploitation	-	-	-	-
Essential Digital Skills	**3**	**4**	**-**	**-**
PC20. operate digital devices and carry out basic internet operations securely and safely	-	-	-	-
PC21. use e- mail and social media platforms and virtual collaboration tools to work effectively	-	-	-	-
PC22. use basic features of word processor, spreadsheets, and presentations	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Entrepreneurship	**2**	**3**	**-**	**-**
PC23. identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research	-	-	-	-
PC24. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion	-	-	-	-
PC25. identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity	-	-	-	-
Customer Service	**1**	**2**	**-**	**-**
PC26. identify different types of customers	-	-	-	-
PC27. identify and respond to customer requests and needs in a professional manner.	-	-	-	-
PC28. follow appropriate hygiene and grooming standards	-	-	-	-
Getting ready for apprenticeship & Jobs	**2**	**3**	**-**	**-**
PC29. create a professional Curriculum vitae (Résumé)	-	-	-	-
PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively	-	-	-	-
PC31. apply to identified job openings using offline /online methods as per requirement	-	-	-	-
PC32. answer questions politely, with clarity and confidence, during recruitment and selection	-	-	-	-
PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements	-	-	-	-
NOS Total	**20**	**30**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	DGT/VSQ/N0102
NOS Name	Employability Skills (60 Hours)
Sector	Cross Sectoral
Sub-Sector	Professional Skills
Occupation	Employability
NSQF Level	4
Credits	2
Version	1.0
Last Reviewed Date	30/11/2023
Next Review Date	29/11/2026
NSQC Clearance Date	30/11/2023

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down the proportion of marks for Theory and Skills Practical for each PC.

2. The assessment for the theory part will be based on the knowledge bank of questions created by the SSC.

3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.

4. Individual assessment agencies will create unique question papers for the theory part for each candidate at each examination/training centre (as per assessment criteria below).

5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training centre based on these criteria.

6. To pass the Qualification Pack assessment, every trainee should score a minimum of 70% of %

aggregate marks to successfully clear the assessment.

7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Minimum Aggregate Passing % at QP Level : 70

(**Please note**: Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
CSC/N0526.Ensure safety of automated system	30	70	-	-	100	25
CSC/N0527.Identify hazards, develop safety standards and protocol	30	70	-	-	100	15
CSC/N0528.Design safety testing measures	30	70	-	-	100	20
CSC/N0529.Implement safety testing measures to prevent accident/injury	30	70	-	-	100	15
CSC/N1339.Collaboratively coordinate with the team	30	70	-	-	100	10
CSC/N0505.Follow health, safety and environment guidelines at workplace	15	20	-	-	35	10
DGT/VSQ/N0102.Employability Skills (60 Hours)	20	30	-	-	50	5
Total	**185**	**400**	**-**	**-**	**585**	**100**

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training

Glossary

Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.

Knowledge and Understanding (KU)	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.
Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills/ Generic Skills (GS)	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.