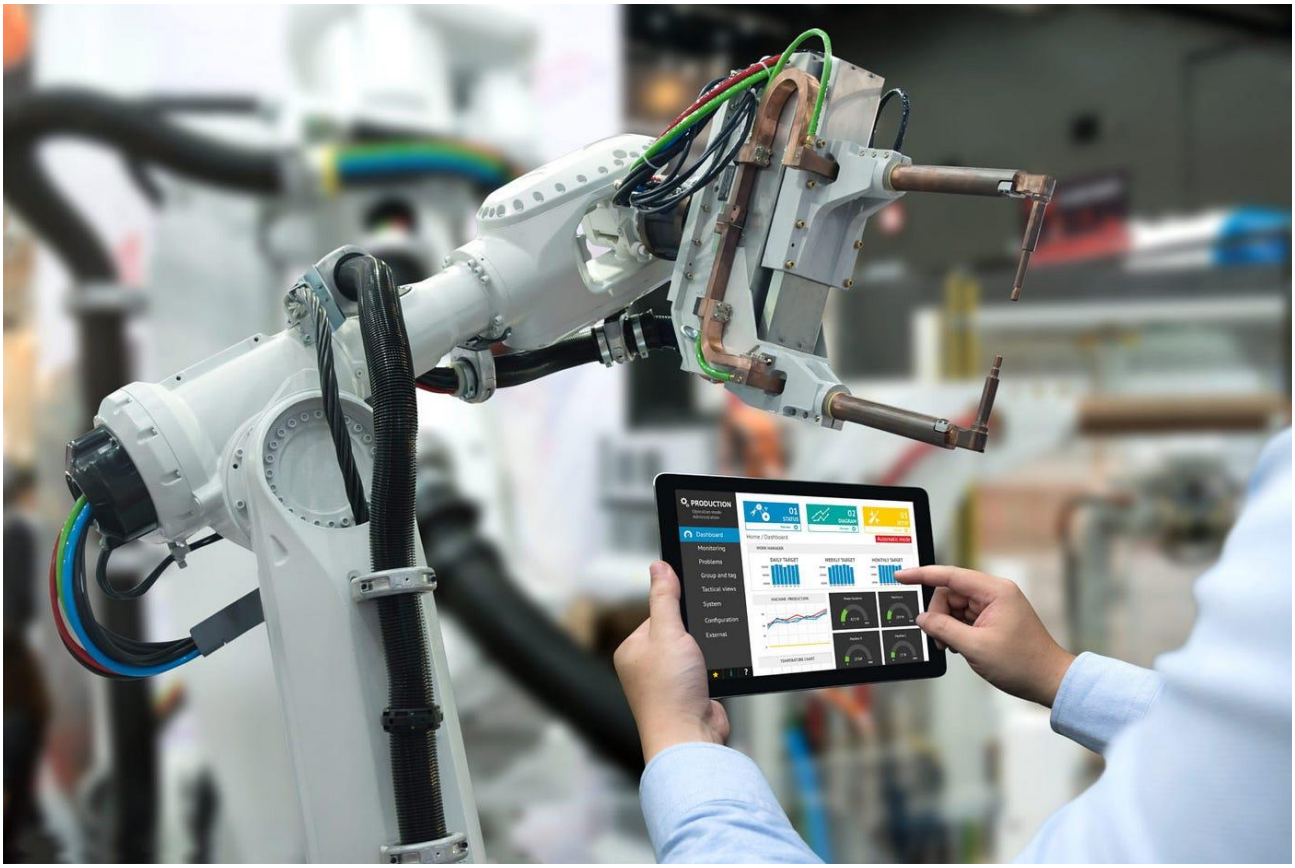

Model Curriculum

QP Name: Robotics and Automation COBOTS Engineer

QP code: CSC/Q 0505

Version: 1.0

NSQF Level: 5.5

Model Course Version: 1.0

Capital Goods and Strategic Skill Council || 39, 1st Floor, Samyak Tower, Pusa Road, Block 9A, VEA Karol Bagh, New Delhi – 110001 || Email: ceo@cgssc.org

Table of Contents

Training Parameter

Border or end of a garment especially woman's veil	Capital goods
Sub-Regions	Machine Tools, Dyes, Mold & Press Tools, Plastic Manufacturing Machinery, Textile Manufacturing Machinery, Process Plant Machinery, Electrical & Power Machinery, Light Engineering Goods, Defence Equipment, Fire Fighting & Safety Equipment
occupancy	design
terrestrial sphere	India
NSQF Level	5.5
Aligned with NCO/ISCO/ISIC code	2519.0100
Minimum educational qualification and experience	UG Degree + 2 years of relevant experience in relevant field or 3 years UG Degree (B.Sc/Btech) in Science & Technology. BCA) / 4 years BE, B.Tech (Electrical, Electronics, Mechanical, Mechatronics, Instrumentation & Control)* or 10th class pass + 3 years diploma in relevant field + 5 years of relevant experience or previous NQC level 5 + 1.5 years of relevant experience * 6 months internship/internship Subject to being offered as a project.
Pre-requisite license or training	not
Minimum Job Entry Age	24 years
Last Reviewed Date	January 31, 2024
Next Review Date	January 31, 2027
NSQC Approval Date	January 31, 2024
QP Version	1.0
Model Curriculum Creation Date	January 31, 2024
Model Courses Valid Up to Date	January 30, 2027
Model textbook version	1.0

Minimum duration of the course	570 hrs
Maximum duration of the course	570 hrs

Program Overview

This section summarizes the ultimate 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:

- Assisting in developing and implementing programming solutions for COBOTS to perform specific tasks in collaboration with human workers.
  • Integrate collaborative robotic systems into existing manufacturing processes, ensuring seamless operation and compatibility.
  • Configure COBOT systems, sensors, and peripherals to meet performance and safety requirements.
  • Optimize robotic workflows to increase efficiency, reduce downtime, and improve overall production output.
  • Collaborate with engineers, automation experts, and other cross-functional teams to understand project requirements and effectively integrate COBOT solutions.
  • Work closely with end users to collect feedback and make adjustments to COBOT programming based on real-world manufacturing conditions.
  • Implementing safety features and protocols to ensure compliance with industry standards and regulations.
  • Conduct risk assessments and develop safety strategies to enable safe interaction between COBOTS and human workers.
  • Diagnose and resolve technical issues related to COBOT programming and functionality.
  • Establish preventive maintenance routines to ensure the ongoing reliability of robotic systems.
  • Create comprehensive documentation, including manuals and operating procedures, to support the use and maintenance of COBOT systems.
  • Keep detailed records of programming code, configurations, and modifications.

Compulsory Modules

The table lists the modules and their duration corresponding to the mandatory NOS of the QP.

NOS & Module Details	Principle Period	Practical period	On-the-job training period (compulsory)	On-the-job training period (recommended)	Total Duration
CSC/N0521 assists in designing, programming, and maintaining industrial robot systems. **NOS Version- 1.0** **NSQF level- 5.5**	**20:00**	**40:00**	**0:00**	**00:00**	**60:00**
Module 1: CG Robotics and Automation COBOTS Introduction to the Programmer's Role	02:00	00:00	0:00	00:00	02:00
Module 2: Assist in the design, program and maintenance of industrial robotic systems	18:00	40:00	0:00	00:00	60:00
Perform the installation, commissioning and integration of CSC/N0513 robotic systems **NOS Version- 1.0** **NSQF level- 5.5**	**40:00**	**50:00**	**30:00**	**00:00**	**120:00**
Module 3: Setup,					

Commission, and Integrate Robotic Systems	40:00	50:00	30:00	00:00	120:00
CSC/N0514: Perform Robot Operating System (ROS) Programming of Robots and COBOTS NOS Version-1.0 NSQF Level- 5.5	**40:00**	**50:00**	**30:00**	**00:00**	**120:00**
Module 4: Facilitate in Commissioning and Troubleshooting of IIoT Systems	40:00	50:00	30:00	00:00	120:00
CSC/N0520: Configure robotic activities, troubleshoot and prevent malfunctions NOS Version-1.0 NSQF level- 5.5	**20:00**	**40:00**	**30:00**	**00:00**	**90:00**
Module 5: Configure robot movements, troubleshoot and prevent malfunctions	20:00	40:00	30:00	00:00	90:00
CSC/N1339: Collaborate Collaboratively with the Team NOS Version- 1.0 NSQF Level – 5	**30:00**	**60:00**	**0:00**	**00:00**	**90:00**
Module 6: Collaborate Collaboratively with the Team	30:00	60:00	0:00	00:00	90:00
CSC/N0505: Health, Safety and Environment at the 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 the 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 Description

Module 1: Robotics and Automation Introduction to the Role of COBOTS Programmers

Bridge module, aligned with CSC/N521 v1.0

Terminal Results:

- Robotics and automation discuss the job role of COBOTS programmers.

Duration: 02:00	**Duration: 0:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe the size and scope of capital, describe the goods industry and its sub-sector. • Robotics and automation discuss the role and responsibilities of COBOTS programmers. • Robotics and automation identify various employment opportunities for COBOTS programmers.	
Class Aids	
Training Kits – Trainer Guide, Presentations, Whiteboards, Markers, Projectors, Laptops, Video Movies	
Tools, equipment and other requirements	
not	

Module 2: Assisting in designing, programming, and maintaining industrial robotic systems.

Bridge module, aligned with CSC/N521 v1.0

Terminal Results:

- Demonstrate the ability to install robotic systems according to specifications and safety standards.
- Conduct thorough commissioning procedures to make the robot operate better.
- Teach and test robots.

Duration: 18:00	**Duration: 40:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the key components involved in robot installation. • Discuss safety protocols and guidelines during the installation process. • Describe and analyze environmental considerations for robot installation. • Define the commissioning procedure for the robotic system. • Explain the concept of calibration and mastering in the context of robotics. • Discuss common challenges and troubleshooting techniques in calibration. • Describe the principles of robot learning and programming. • Discuss the importance of precision and precision in robot programming. • Explain the importance of testing in the robot integration process. • Expand the test results for system validation. • Explain the concept of path planning in robotics. • Discuss potential challenges and solutions in path planning. • Elaborate the role of a robotic controller in the overall system. • Describe the process of integrating a	• Perform the actual installation of the robot system. • Implement safety measures during the installation process. • Document installation steps and procedures. • Perform the commissioning procedure for the robot system. • Use commissioning tools and software effectively. • Troubleshoot and address problems that may arise during commissioning. • Calibrate the sensors and actuators to achieve optimal performance. • Master the robot to ensure precise and precise movements. • Solve calibration challenges through practical solutions. • Program the robot using different languages and methods. • Demonstrate the ability to teach robots specific tasks. • Optimization and refinement of robotic programs for efficiency. • Perform functional tests to validate the robotic system. • Interpret and analyze test results for system optimization.

robot controller with real parameters. • Explain the safety protocols associated with robot installation and operation. • Discuss the importance of safety in the context of robotics and automation.	• Implement corrective actions based on the test results. • Create obstacle-free robot paths using practical scenarios. • Apply path planning techniques in real-world situations. • Solve challenges related to path planning through practical experience. • Integrate a robot controller with real parameters. • Test the integration for seamless communication. • Troubleshoot and resolve issues related to controller integration. • Apply safety protocols throughout the process. • Confirm compliance with industry safety standards. • Demonstrate the ability to prioritize safety in all practical activities.
Class Aids	
Computer, Projection Equipment, PowerPoint Presentation and Software, Facilitator Guide, Participant's Handbook.	
Tools, equipment and other requirements	
Cobots, Robot Programming Software, Simulation Software, Teaching Pendants, End-of-Arm Tooling (EOAT), Sensors and Vision Systems, Power Supplies, Workstations, Toolkits, Networking Equipment	

Module 3: Perform installation, commissioning, and integration of robotic systems.

Bridge module, aligned with CSC/N513 v1.0

Terminal Results:

- Demonstrate the ability to install robotic systems according to specifications and safety standards.
- Conduct thorough commissioning procedures to make the robot operate better.
- Teach and test robots.

Duration: 40:00	**Duration: 50:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the key components involved in robot installation. • Discuss safety protocols and guidelines during the installation process. • Describe and analyze environmental considerations for robot installation. • Define the commissioning procedure for the robotic system. • Explain the concept of calibration and mastering in the context of robotics. • Discuss common challenges and troubleshooting techniques in calibration. • Describe the principles of robot learning and programming. • Discuss the importance of precision and precision in robot programming. • Explain the importance of testing in the robot integration process. • Expand the test results for system validation. • Explain the concept of path planning in robotics. • Discuss potential challenges and solutions in path planning. • Elaborate the role of a robotic controller in the overall system. • Describe the process of integrating a robot controller with real	• Perform the actual installation of the robot system. • Implement safety measures during the installation process. • Document installation steps and procedures. • Perform the commissioning procedure for the robot system. • Use commissioning tools and software effectively. • Troubleshoot and address problems that may arise during commissioning. • Calibrate the sensors and actuators to achieve optimal performance. • Master the robot to ensure precise and precise movements. • Solve calibration challenges through practical solutions. • Program the robot using different languages and methods. • Demonstrate the ability to teach robots specific tasks. • Optimization and refinement of robotic programs for efficiency. • Perform functional tests to validate the robotic system. • Interpret and analyze test results for system optimization. • Implement corrective actions based

parameters. • Explain the safety protocols associated with robot installation and operation. • Discuss the importance of safety in the context of robotics and automation.	on the test results. • Create obstacle-free robot paths using practical scenarios. • Apply path planning techniques in real-world situations. • Solve challenges related to path planning through practical experience. • Integrate a robot controller with real parameters. • Test the integration for seamless communication. • Troubleshoot and resolve issues related to controller integration. • Apply safety protocols throughout the process. • Confirm compliance with industry safety standards. • Demonstrate the ability to prioritize safety in all practical activities.
Class Aids	
Computer, Projection Equipment, PowerPoint Presentation and Software, Facilitator Guide, Participant's Handbook.	
Tools, equipment and other requirements	
Cobots, Robot Programming Software, Simulation Software, Teaching Pendants, End-of-Arm Tooling (EOAT), Sensors and Vision Systems, Power Supplies, Workstations, Toolkits, Networking Equipment	

Module 4: Programming Robots and Cobots of Robot Operating System (ROS)

Bridge module, aligned with CSC/N514 v1.0

Terminal Results:

- Demonstrate efficiency in programming robots and cobots using ROS.
- Demonstrate skills to test the application and dry run.
- Demonstrate proficiency in identifying errors in robot programming and resolving them.

Duration: 40:00	**Duration: 50:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Define ROS and explain its importance in robotics and automation. • Describe the structure and components of ROS. • Explain the basics of robot programming languages (e.g., Python, C++). • Describe motion control programming and trajectory planning for robots. • Describe robot programming code. • Define robot and cobot parameters and their importance in programming. • Explain the impact of parameter adjustment on robot behavior and performance. • Discuss how to design and implement robotic applications using ROS. • Explain the concept of ROS nodes, topics, and services in application development. • Discuss debugging techniques using ROS tools.	• Write code to control the speed of robots and cobots in different scenarios. • Apply algorithms for accurate movement and positioning. • Validate programmed movements through simulations and real-world testing. • Configure and modify robot and cobot parameters for specific tasks. • Test and verify the effect of parameter adjustment on the robot's behavior. • Optimize parameters for better performance and efficiency. • Develop test cases for robotic applications. • Conduct dry runs to ensure correct execution of programmed tasks. • Analyze the results of the application test and make the necessary adjustments. • Explore and operate the robot in various modes, such as autonomous and teleoperated. • Switch between operational modes based on specific requirements. • Demonstrate an understanding of safety protocols in each operational mode. • Program cobots for collaborative work with human operators. • Implement safety features and protocols for human-robot collaboration. • Evaluating and increasing the efficiency of collaborative tasks through programming. • Integrate various sensors (e.g., cameras, proximity sensors) into robotic applications. • Program actuator to effectively respond to sensor input. • Validate the integration through

	practical testing and troubleshooting.
Class Aids	
Training kits (trainer guides, presentations). Whiteboard, Marker, Projector, Laptop	
Tools, equipment and other requirements	
Cobots, Robot Programming Software, Simulation Software, Teaching Pendants, End-of-Arm Tooling (EOAT), Sensors and Vision Systems, Power Supplies, Workstations, Toolkits, Networking Equipment	

Module 5: Configure robot movements, troubleshoot and prevent malfunctions

Bridge module, aligned with CSC/N520 v1.0

Terminal Results:

- Demonstrate efficiency in programming robots and cobots using ROS.
- Demonstrate skills to test the application and dry run.
- Demonstrate proficiency in identifying errors in robot programming and resolving them.

Duration: 20:00	Duration: 40:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Define ROS and explain its importance in robotics and automation. • Describe the structure and components of ROS. • Explain the basics of robot programming languages (e.g., Python, C++). • Describe motion control programming and trajectory planning for robots. • Describe robot programming code. • Define robot and cobot parameters and their importance in programming. • Explain the impact of parameter adjustment on robot behavior and performance. • Discuss how to design and implement robotic applications using ROS. • Explain the concept of ROS nodes, topics, and services in application development. • Discuss debugging techniques using ROS tools.	• Write code to control the speed of robots and cobots in different scenarios. • Apply algorithms for accurate movement and positioning. • Validate programmed movements through simulations and real-world testing. • Configure and modify robot and cobot parameters for specific tasks. • Test and verify the effect of parameter adjustment on the robot's behavior. • Optimize parameters for better performance and efficiency. • Develop test cases for robotic applications. • Conduct dry runs to ensure correct execution of programmed tasks. • Analyze the results of the application test and make the necessary adjustments. • Explore and operate the robot in various modes, such as autonomous and teleoperated. • Switch between operational modes based on specific requirements. • Demonstrate an understanding of safety protocols in each operational mode. • Program cobots for collaborative work with human operators. • Implement safety features and protocols for human-robot collaboration. • Evaluating and increasing the efficiency of collaborative tasks through programming. • Integrate various sensors (e.g., cameras, proximity sensors) into robotic applications. • Program actuator to effectively respond to sensor input. • Validate the integration through

	practical testing and troubleshooting.
Class Aids	
Training kits (trainer guides, presentations). Whiteboard, Marker, Projector, Laptop	
Tools, equipment and other requirements	
Cobots, Robot Programming Software, Simulation Software, Teaching Pendants, End-of-Arm Tooling (EOAT), Sensors and Vision Systems, Power Supplies, Workstations, Toolkits, Networking Equipment	

Module 6: Collaborate collaboratively with the team.

Bridge module, aligned with CSC/N1339 v1.0

Terminal Results:

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

Duration: 30:00	Duration: 60:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Define and explain key concepts of team dynamics, including roles, norms, and communication patterns. • Discuss the importance of implementing effective communication strategies within a team, considering different communication channels and styles. • Describe the components needed to create a positive and productive team environment in the context of the data analytics engineer role. • Describe the importance of cooperation 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 terms of the data analytics engineer.	• Conduct a practical team-building exercise to promote collaboration and teamwork. • Demonstrate experience and identify strategies for building a cohesive team environment. • Participate in a communication simulation, considering the different scenarios encountered in the data analytics team. • Get feedback on communication effectiveness and adapt communication styles accordingly. • Work on a collaborative data analytics project addressing real-world challenges. • Demonstrate the ability to collaborate effectively with team members to achieve project objectives. • Simulate decision-making scenarios specific to data analytics projects. • Actively contribute 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 work ownership. • Demonstrate a proactive approach to meeting responsibilities and meeting project deadlines. • Attend a diversity training workshop to gain insights to respect diverse opinions, customs, and preferences. • Apply the knowledge gained to increase collaboration within the team, considering cultural and professional diversity.
Class Aids	

Training kits (trainer guides, presentations). Whiteboard, Marker, Projector, Laptop
Tools, equipment and other requirements
Cobots, Robot Programming Software, Simulation Software, Teaching Pendants, End-of-Arm Tooling (EOAT), Sensors and Vision Systems, Power Supplies, Workstations, Toolkits, Networking Equipment

Module 7: Health, Safety and Environment at the Workplace

Bridge module, aligned with CSC/N1339 v1.0

Terminal Results:

- Demonstrate methods of maintaining personal health and safety.
- Describe the process of assisting in risk management.
- Explain how to check the first aid box, firefighting, and safety equipment.
- Describe the process of helping in waste management.
- Explain the importance of following fire safety guidelines.
- Explain the importance of following emergency and first aid procedures.
- Demonstrate relevant documentation and the process of conducting a review.

Duration: 10:00	**Duration: 20:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Ensuring adherence to recommended practices to ensure protection from infection and transmission to others, such as the use of hand sanitizers and face masks. • Explain the importance and process of examining working conditions, assessing potential health and safety risks, and taking appropriate measures to mitigate them. • Explain the importance and process of selecting and using appropriate PPE relevant to work and working conditions. Explain Recommended techniques should be followed when lifting and moving heavy objects to avoid injury. • Explain the importance of following manufacturer's instructions and workplace safety guidelines when 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 various hazards. • Explain how to prevent or mitigate different types of hazards.	• Demonstrate the use of appropriate personal protective equipment (PPE) relevant to work and work conditions. • Demonstrate how to safely handle hazardous materials. • Perform the process of testing firefighting and various safety equipment to ensure that they are in usable condition. • Properly demonstrate the process of recycling and disposal of different types of waste. • Demonstrate how to use the appropriate type of fire extinguisher to safely extinguish different types of fires. • Demonstrate how to give proper first aid to injured personnel. • Demonstrate the process of performing Cardiopulmonary resuscitation (CPR) on a potential victim of cardiac arrest. • Perform the procedure for appropriately documenting health and safety at work, including all necessary information.

• Explain how to safely handle and store hazardous materials. • Explain the importance of ensuring that the first aid box is updated with relevant first aid supplies. • Describe the process of checking and testing firefighting and various safety equipment to ensure that they are in usable condition. • Explain the criteria for separating waste into appropriate categories. • Describe the methods suitable for recycling recyclable waste. • Describe the process and applicable regulations for safely disposing of non-recyclable waste. • Explain the use of different types of fire extinguishers to extinguish different types of fires. • Mention recommended practices for safe rescue during fire emergencies. • Explain how to request assistance from the fire department to extinguish serious fires. • Explain the proper practices to be followed during workplace emergencies to ensure safety and minimize damage to organizational property. • Explain the common health and safety hazards present in the work environment, the associated risks, and how to mitigate them. • Mention the safe working practices to be followed while working in various hazardous places and using electrical appliances. • Explain the importance of ensuring easy access to firefighting and safety equipment. • Explain the appropriate preventive and curative actions in case of exposure to toxic substances, such as poisoning	

Chemicals and gases. • Describe the various causes of fire in different work environments and the recommended precautions to be taken to prevent fire accidents. • Describe the different methods of extinguishing fire. • List the various materials used for extinguishing fire. • Explain the applicable rescue techniques to be followed during a fire emergency. • Explain the importance of placing and following safety signs and instructions at strategic locations in the workplace. • Explain the different types of first aid treatment provided for different types of injuries. • State possible injuries associated with incorrect manual handling. • Explain how to move the injured person safely. • Mention the various hazards related to the use of different machinery, tools, tools, tools and materials. • Explain the importance of ensuring free access to no barriers and exit the fire. • Explain how to safely free a person from electrocution. • Explain how until Give proper first aid to the injured person. • Explain how until Perform cardiopulmonary Resuscitation (CPR). • Explain importance Coordinating with emergency services to request immediate medical assistance for individuals requiring professional medical attention or hospitalization. • Provide the appropriate documents	

Following a health and safety incident at work has to be done, and relevant information has to be included. • Explain the importance and process of regularly reviewing health and safety conditions at work or after an incident. • Explain the importance and process of implementing appropriate changes to improve the state of health and safety at work.	
Class Aids	
Computer, Projection Equipment, PowerPoint Presentation and Software, Facilitator Guide, Participant's Handbook.	
Tools, equipment and other requirements	
Personal protective equipment, cleaning equipment and materials, sanitizers, soaps, masks	

Module 8: Employability Skills

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

Terminal Results:

- Discuss the employability skills required for jobs in different industries
- Explain the constitutional values including civil rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, care and respect for others that are required to be a responsible citizen
- Discuss how to identify potential business opportunities, sources of funding, and the financial and legal risks associated 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 different industries • List various learning and employment related Indian government and private portals and their usage • Explain the constitutional values including civil rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, care and respect for others that are required to be a responsible citizen • Discuss the importance of 21st-century relevant skills. • Describe the benefits of continuous learning. • Explain the importance of active listening for effective communication • Discuss the importance of working together with others in a team • Discuss the importance of raising sexual harassment issues as per the POSH Act. • List the general components of salary and calculate income, expenses, taxes, investments, etc. • Discuss legal rights, laws, and support • Describe the role of digital technology in today's life • Discuss the importance of displaying responsible online behavior safely and securely, while browsing, using various	• Practice a variety of environmentally sustainable practices. • Demonstrate 21st century skills such as self-awareness, behavioral 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. • Perform basic English sentences to use for everyday conversations, in person and over the telephone, in a variety of contexts • 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 appropriately with all genders and PWDs • Underline the importance of selecting the right financial institution, product and service • Demonstrate how to conduct offline and online financial transactions safely

social media platforms, e-mail, etc • Explain the types of entrepreneurship and enterprises • Discuss how to identify potential business opportunities, sources of funding, and the financial and legal risks associated with its mitigation plan • Describe the 4Ps of Marketing- Product, Price, Place and Promotion and apply them as required • Expand the importance of analyzing different types and needs of customers • Explain the importance of identifying customer needs and responding to them in a professional manner. • Discuss the importance of maintaining hygiene and dressing appropriately • Explain the importance of maintaining hygiene and confidence during an interview • List the steps to search for apprenticeship opportunities and register	and securely • Operate digital devices and use related applications and features safely and securely • Create sample word documents, Excel sheets, and presentations using basic features • Use virtual collaboration tools to work effectively • Prepare 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 offices, recruitment agencies and job portals respectively • Do a mock interview
Class Aids:	
PPT, laptop, white board, marker, projector and screen, audio-visual, chart paper, telephone connection, landline phone and other necessary stationery.	
Tools, equipment and other requirements	
Computer with latest configuration (PC) - and internet connection with standard operating system and standard word processor and worksheet software (licensed) (all software must be either latest version or one/two version below), scanner printer	

annexation

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	**specialization**	**Relevant Industry Experience**		**Training Experience**		**Comments**
		Salary timber tree	***specialization***	***Salary timber tree***	***specialization***	
title	Degree in Electrical/Mechatronics/Industrial/Information Technology engineering science	7		0		Practical skills and knowledge required in the relevant field

Trainer Certification	
Domain Certification	**Platform Certification**
Certified for the job role: "**Robotics and Automation COBOTS Engineer**" Mapped in QP: "CSC/Q0505, v1.0". The minimum accepted score is 80%	Recommended that the trainer be certified for a job role: "Trainer(VET and skills)", mapped in the qualification pack: "MEP/Q2601 V3.0". The minimum sanctioned is 80% as per the respective SSC guidelines.

Evaluator Requirements

Evaluator Prerequisites						
Minimum Educational Qualification	**specialization**	**Relevant Industry Experience**		**Training/Assessment Experience**		**Comments**
		Sal tree a timber tree	***specialization***	***Sal tree a timber tree***	***specialization***	
title	Electrical/ Mechatronics / Industrial/ Degree in Information Technology Engineering	7		0		Practical skills and knowledge required in the relevant field

Evaluator Certification	
Domain Certification	**Platform Certification**
Certified for the job role: "**Robotics and Automation COBOTS Engineer**" Mapped in QP: "CSC/Q0505, v1.0". The minimum accepted score is 80%	Recommended the assessor is Certified for the job role: "Assessor(VET and skills)", mapped For the qualification pack: "MEP/Q2701, V3.0", with a Minimum score of 80%.

Evaluation Strategy

1. Appraisal System Overview:
    - Batches handed over to appraisal agencies for evaluation on SDMS/SIP or email
    - Evaluation agencies send evaluation confirmation VTP/TC looping to SSC
    - The evaluation agency deploys a ToA certified evaluator to execute the assessment
    - SSC monitors the evaluation process and records
2. Environmental Testing

    To ensure a favorable environment for conducting the test, the instructor shall:
    - Confirm that the centre is available at the same address as stated on the SDMS or SIP
    - Check the duration of training.
    - Check the evaluation start and end times to be 10 am and 5 pm respectively
    - Make sure there are 30 evaluators if the batch size is more than 2.
    - Check that the time allotted to the candidates to complete the Theory and Practical Assessment is correct.
    - Check the method of evaluation- Online (tab/tablet) Computer) or Offline (OMR/Computer) pp).
    - Confirm that the number of TABs on the ground is correct for the evaluation to be executed smoothly.
    - Check the availability of lab equipment for the particular job role.
3. Evaluation Quality Assurance Level/Assessment
    - Question papers prepared by Subject Matter Experts (SMEs)
    - Question papers made by SMEs verified by other subject experts
    - Questions are mapped with NOS and PC
    - The question papers are prepared considering that levels 1 to 3 are for unskilled and semi-skilled individuals, and levels 4 and above are for skilled, supervisory and upper management
    - The evaluator must be TOA certified and the instructor must be TOT certified
    - The appraisal agency should follow the evaluation guidelines to evaluate
4. Types of evidence or evidence-gathering protocols:
    - Time-stamped and geotagged reporting of the evaluator from the assessment location
    - Center photos with signboards and scheme-specific branding
    - Biometric or manual attendance sheet of trainees during training period (sealed by TP)
    - Time-stamped and geotagged evaluations (theory + viva + practical) Photos and videos
5. Method of Verification or Verification:

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

    For the safety of valuation papers and information, the assessor shall ensure:
    - Hard copies of documents are stored

- Soft copies of documents and photos of evaluation are uploaded/accessed from cloud storage
- Soft copies of documents and photographs of the assessment are stored on the hard drive

reference

Glossary

period	Or variety
Declarative Knowledge	Declarative knowledge refers to the facts, concepts, and theories that are known and/or used to accomplish a task or solve a problem. Or requires understanding.
Key Learning	The main outcome of learning is the statement of what the learner must know, understand and be able to do in order to achieve terminal outcomes. A set of key learning outcomes will create the training outcomes. The training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application).
OJT (M)	On-the-job training (compulsory); Trainees are mandated to complete specified hours of on-site training
OJT(R)	On-the-job training (recommended); Trainees are recommended specified hours of on-site training
Procedural Knowledge	Procedural knowledge addresses how to do something, or how to perform it
Training Outcomes	The training outcome is a statement of what a learner will know, understand and be able to do upon completion of the training.
Terminal Results	The terminal result is a statement of what a learner knows, understands and is able to do upon completion of a module. A set of terminal results helps to achieve training results.

Acronyms and Abbreviations

period	Or variety
Open School	National Skill Qualification Committee
NSQF	National Skill Qualification Framework
OJT	On-the-job training
OMR	Optical Mark Recognition
Police Constable	Performance Criteria
Pwd	Persons with Disabilities
QP	Qualification Pack
SDMS	Skill Development and Management System
Sipping	Skill India Portal
Ssc	Sector Skill Council
Tc	Trainer Certificate
TOA	Training of evaluators
Tot	Training of Trainers
TP	Training Providers