



Model Curriculum

QP Name: Wiring Harness Assembly Operator

QP Code: ELE/Q6306

QP Version: 2.0

NSQF Level: 3

Model Curriculum Version: 2.0

Electronics Sector Skills Council of India || 155, 2nd Floor, ESC House, Okhla
Industrial Area- Phase 3, New Delhi– 110020

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Training Parameters

Sector	Electronics
Sub-Sector	Electronics Manufacturing System
Occupation	Production-EMS
Country	India
NSQF Level	3
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7419.0300
Minimum Educational Qualification & Experience	10th Grade Pass OR 8th Grade Pass + NTC (2 years after 8th) OR 8th Grade Pass + 2 years relevant experience and 18 Years
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	27/01/2022
Next Review Date	27/01/2027
NSQC Approval Date	27/01/2022
Version	2.0
Model Curriculum Creation Date	27/01/2022
Model Curriculum Valid Up to Date	27/01/2027
Model Curriculum Version	2.0
Maximum Duration of the Course	390 Hours

Program Overview

This section summarizes the end objectives of the program along with its duration.

Training Outcomes

At the end of the program, the learner should have acquired the listed knowledge and skills.

Compulsory:

- Describe the role and responsibilities of a Wiring Harness Assembly Operator
- Employ different techniques for performing pre-assembly operations of the harness
- Demonstrate the process to assemble the components of wire harness
- Demonstrate effective ways of communication while being sensitive of gender and PwDs
- Discuss and follow the health and safety procedures

Compulsory Modules

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

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Recommended)	On-the-Job Training Duration (Mandatory)	Total Duration
<i>Bridge Module</i>	10:00	20:00	00:00	00:00	30:00
<i>Module 1: Role and Responsibilities of a Wiring Harness Assembly Operator</i>	10:00	20:00	00:00	00:00	30:00
<i>ELE/N6306 – Perform Preassembly Operations</i>	40:00	50:00	00:00	30:00	120:00
<i>Module 2: Perform preassembly operations</i>	40:00	50:00	00:00	30:00	120:00
<i>ELE/N6307 – Assemble the components of wire harness</i>	40:00	50:00	00:00	60:00	150:00
<i>Module 3: Assemble the components of wire harness</i>	40:00	50:00	00:00	60:00	150:00
<i>ELE/N9972 – Work Effectively at the Workplace</i>	15:00	15:00	00:00	00:00	30:00
<i>Module 4: Soft Skills and Work Ethics</i>	15:00	15:00	00:00	00:00	30:00

<i>ELE/N1003 – Apply Health and Safety Practices at the Workplace</i>	15:00	15:00	00:00	00:00	30:00
Module 5: Basic Health and Safety Practices	15:00	15:00	00:00	00:00	30:00
<i>DGT/VSQ/N0101- Employability Skills (30 Hours)</i>	30:00	00:00	00:00	00:00	30:00
Module 6: Employability Skills (30 Hours)	30:00	00:00	00:00	00:00	30:00
Total Duration	150:00	150:00	00:00	90:00	390:00

Module Details

Module 1: Role and Responsibilities of a Wiring Harness Assembly Operator

Bridge Module

Terminal Outcomes:

- Discuss the scope of work and workplace practices in the electronics industry
- Explain the role and responsibilities of a Wiring Harness Assembly Operator

Duration: 10:00	Duration: 20:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe the size and scope of the electronics industry and its sub-sectors. • Explain the roles and responsibilities of a wiring harness assembly operator. • Describe various employment opportunities for a wiring harness assembly operator in the electronics industry. • Explain the organizational policies on incentives, personnel management and quality standards. • Outline the environment and safety related guidelines that an assembly operator must follow at the workplace 	<ul style="list-style-type: none"> • Demonstrate different ways and techniques of crimping, cutting, soldering and taping of wires etc. • Prepare a sample reporting document and feedback form
Classroom Aids:	
Training kit (Trainer guide, Presentations)	
Tools, Equipment and Other Requirements	
Wires, pliers, job sheets, report formats	

Module 2: Perform Pre-Assembly Operations

Mapped to ELE/N6306

Terminal Outcomes:

- Carry out necessary steps for cutting and crimping of wires
- Explain the pre-requisites and preparation required for the assembly process
- Discuss how to prepare a checklist of work and quality standards

Duration: 40:00	Duration: 50:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Outline the organizational structure to receive instructions and report work status • List the steps of wire harness pre-assembly operations to be completed for smooth process flow • Outline the precautionary guidelines and safety measures that must be followed by an assembly operator • List the factors to be considered while visually inspecting the crimped wires • Discuss the importance of storing final output at safe, secure and designated place • Highlight some work efficient ways to reduce wastage and achieve quality standards 	<ul style="list-style-type: none"> • Demonstrate the steps of cutting and crimping of wires to terminals after analysing the assembly requirements • Demonstrate the use of calibrated measuring instruments to get required size and length of wires • Prepare a control plan to compare actual wires with the desired ones • Prepare an organizational path to coordinate with quality assurance team to ensure the required quality for wires
Classroom Aids:	
Training kit (Trainer guide, Projector), pen, paper, duster, marker	
Tools, Equipment and Other Requirements	
Wires, pliers, crimping machines, measuring instruments, electronic components	

Module 3: Assemble the components of wire harness

Mapped to ELE/N6307

Terminal Outcomes:

- Demonstrate the steps to assemble the wire harness
- Apply proper techniques for recording assembly testing results in prescribed formats
- Explain the steps required to check and finalize the assembled harness
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Duration: 40:00	Duration: 50:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Distinguish among different types of taping and their utility for different types of wires • List the steps to check whether terminals are locked in the housing • State the method and importance of labelling wires and connections on the wiring harness • Describe the PPE components and need to wear them before testing the assembly components 	<ul style="list-style-type: none"> • Prepare a wiring layout diagram to display connecting pre-assembled wires, route leads and subassemblies etc. • Demonstrate the steps to insert taped wires into corrugated tube • Prepare a plan to identify suitable locations on assembly for using stud mountable clamps, if required • Demonstrate the process to finalize the assembly process and ensure the components fixation • Work on the components to visually check the defects • Demonstrate the steps of different tests to check different components and wires • Prepare a report to record the testing results and send the same to supervisor for approval
Classroom Aids:	
Training kit (Trainer guide, Projector), pen, paper, duster, marker	
Tools, Equipment and Other Requirements	
Electronic device under test; wires, soldering gun, soldering metal, clamps, fitting stud, laying board, diagrams, wires, terminals	

Module 4: Soft Skills and Work Ethics

Mapped to ELE/N9972

Terminal Outcomes:

- Employ appropriate techniques for communicating effectively with supervisor and colleagues
- Carry out work while considering gender and disability

Duration: 15:00	Duration: 15:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • List and discuss potential hazards at the workplace • Discuss the importance of following organizational guidelines for dress code, time schedules, language usage and other behavioral aspects. • State the importance of maintaining personal safety and hygiene at the workplace • Describe the process of reporting grievances and unethical conduct such data breach, sexual harassment at the workplace, etc. • Discuss ways to create sensitivity for different genders and Persons with Disabilities (PwD). 	<ul style="list-style-type: none"> • Roleplay to display the use of professional language and behaviour that is respectful of PwD and all genders. • Demonstrate an effective interaction with the supervisor and analyse his feedback • Prepare a checklist to record the work status and report the supervisor about the same • Demonstrate effective ways of communication such as telephonic, face to face, written etc.
Classroom Aids	
Training kit (Trainer guide, Presentations)	
Tools, Equipment and Other Requirements	
Sample of escalation matrix, organization structure	

Module 5: Basic Health and Safety Practices

Mapped to ELE/N1003

Terminal Outcomes:

- Achieve optimum productivity and quality
- Demonstrate how to perform work as per health and safety guidelines

Duration: 15:00	Duration: 15:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the importance of good housekeeping. • Discuss ways to achieve work quality standards and deliver as per the given timelines • State the organizational safety procedures for maintaining electrical safety (ESD), handling tools and hazardous materials. • Describe waste disposal process as per the organizational procedures. • Differentiate between different types of waste and their disposal procedure • Explain the importance of efficient utilization of water, electricity and other resources 	<ul style="list-style-type: none"> • Demonstrate the use of protective equipment suitable as per tasks and work conditions. • Attend fire drills, waste disposal workshops or any other safety workshops conducted by the organization • Role-play to demonstrate the use of different types of dustbins for different types of waste • Clean and maintain the tools, machines and equipment in an appropriate condition
Classroom Aids	
Training kit (Trainer guide, Presentations)	
Tools, Equipment and Other Requirements	
Personal Protection Equipment: safety glasses, head protection, rubber gloves, safety footwear, warning signs and tapes, fire extinguisher, first aid kit, fire extinguishers and warning signs.	

Module 6: Employability Skills (30 Hours) Mapped to DGT/VSQ/N0101

Terminal Outcomes:

- Discuss about Employability Skills in meeting the job requirements
- Describe opportunities as an entrepreneur.
- Describe ways of preparing for apprenticeship & Jobs appropriately.

Duration: 30:00	Duration: 00:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain constitutional values, civic rights, responsibility towards society to become a responsible citizen • Discuss 21st century skills • Explain use of basic English phrases and sentences. • Demonstrate how to communicate in a well-behaved manner • Demonstrate how to work with others • Demonstrate how to operate digital devices • Discuss the significance of Internet and Computer/ Laptops • Discuss the need for identifying business opportunities • Discuss about types of customers. • Discuss on creation of biodata • Discuss about apprenticeship and opportunities related to it. 	
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
Computer, UPS, Scanner, Computer Tables, LCD Projector, Computer Chairs, White Board OR Computer Lab	

Module 7: On-the-Job Training

Mapped to Wiring Harness Assembly Operator

Mandatory Duration: 90:00	Recommended Duration: 00:00
Location: On Site	
Terminal Outcomes	
<ol style="list-style-type: none"> 1. Define the fundamental concepts of electronics and electronics components 2. Demonstrate the tasks involved in pre-assembly operations of wires 3. Perform the crimping, taping and soldering operations on wires 4. Demonstrate the fittings and assembly of wires and other components on layout board 5. Employ different techniques for restructuring faulty components 6. Demonstrate to test the functioning of different electronic components 7. Prepare an organization path to coordinate with Quality Assurance (QA) team to get approval on assembled wires 8. Demonstrate how to interact and coordinate with supervisor and colleagues 9. Carry out tasks and responsibilities as per the given timelines and quality standards 	

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
ITI/Diploma/ Certified in relevant CITS Trade	Electronics/Electrical/ Mechanical	1	Wiring Harness Assembly	1	Electronics	

Trainer Certification	
Domain Certification	Platform Certification
“Wiring Harness Assembly Operator”, “ELE/Q6306, v2.0”, Minimum accepted score is 80%	Recommended that the Trainer is certified for the Wiring Harness Assembly Operator “Trainer (VET and Skills)”, mapped to the Qualification Pack: “MEP/Q2601, V2.0”, with minimum score of 80%

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training/Assessment Experience		Remarks
		Years	Specialization	Years	Specialization	
ITI/Diploma/ Certified in relevant CITS Trade	Electronics/Electrical/ Mechanical	2	Wiring Harness Assembly	1	Electronics	

Assessor Certification	
Domain Certification	Platform Certification
<p>“Wiring Harness Assembly Operator, “ELE/Q6306, v2.0”, Minimum accepted score is 80%</p>	<p>Recommended that the Assessor is certified for the Wiring Harness Assembly Operator “Assessor (VET and Skills)”, mapped to the Qualification Pack: “MEP/Q2701, V2.0”, with minimum score of 80%</p>

Assessment Strategy

1. Assessment System Overview:

- Batches assigned to the assessment agencies for conducting the assessment on SDMS/SIP or email
- Assessment agencies send the assessment confirmation to VTP/TC looping SSC
- Assessment agency deploys the ToA certified Assessor for executing the assessment
- SSC monitors the assessment process & records

2. Testing Environment

To ensure a conducive environment for conducting a test, the trainer will:

- Confirm that the centre is available at the same address as mentioned on SDMS or SIP
- Check the duration of the training.
- Check the Assessment Start and End time to be 10 a.m. and 5 p.m.
- Ensure there are 2 assessors if the batch size is more than 30.
- Check that the allotted time to the candidates to complete Theory & Practical Assessment is correct.
- Check the mode of assessment—Online (TAB/Computer) or Offline (OMR/PP).
- Confirm the number of TABs on the ground are correct to execute the Assessment smoothly.
- Check the availability of the Lab Equipment for the particular Job Role.

3. Assessment Quality Assurance levels / Framework:

- Question papers created by the Subject Matter Experts (SME)
- Question papers created by the SME verified by the other subject Matter Experts
- Questions are mapped with NOS and PC
- Question papers are prepared considering that level 1 to 3 are for the unskilled & semi-skilled individuals, and level 4 and above are for the skilled, supervisor & higher management
- The assessor must be ToA certified & trainer must be ToT Certified
- Assessment agency must follow the assessment guidelines to conduct the assessment

4. Types of evidence or evidence-gathering protocol:

- Time-stamped & geotagged reporting of the assessor from assessment location
- Centre photographs with signboards and scheme-specific branding
- Biometric or manual attendance sheet (stamped by TP) of the trainees during the training period
- Time-stamped & geotagged assessment (Theory + Viva + Practical) photographs & videos

5. Method of verification or validation:

To verify the details submitted by the training centre, the assessor will undertake:

- A surprise visit to the assessment location
- A random audit of the batch
- A random audit of any candidate

6. Method for assessment documentation, archiving, and access

To protect the assessment papers and information, the assessor will ensure:

- Hard copies of the documents are stored
- Soft copies of the documents & photographs of the assessment are uploaded/ accessed from Cloud Storage
- Soft copies of the documents & photographs of the assessment are stored in the Hard drive

References

Glossary

Term	Description
Declarative knowledge	Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood to accomplish a task or to solve a problem.
Key Learning	The key learning outcome is the statement of what a learner needs to know, understand and be able to do to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application).
OJT (M)	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on the site
OJT (R)	On-the-job training (Recommended); trainees are recommended the specified hours of training on the site
Procedural Knowledge	Procedural knowledge addresses how to do something, or how to perform a
Training Outcome	Training outcome is a statement of what a learner will know, understand and be able to do upon the completion of the training.
Terminal Outcome	The terminal outcome is a statement of what a learner will know, understand and be able to do upon the completion of a module. A set of terminal outcomes help to achieve the training outcome.

Acronyms and Abbreviations

Term	Description
ESD	Electrostatic Discharge
PPE	Personal Protective Equipment
VTB	Vinyl Tube
NCO	National Occupational Standards
NOS	National Skills Qualification Committee
NSQF	National Skills Qualification Framework
OJT	On-the-Job Training
PC	Performance Criteria
PwD	Persons with Disabilities
QP	Qualification Pack
SDMS	Skill Development & Management System
SIP	Skill India Portal
SME	Small and Medium Enterprises
SOP	Standard Operating Procedure
SSC	Sector Skill Council
TC	Trainer Certificate
ToA	Training of Assessors
ToT	Training of Trainers
TP	Training Provider
UL	Underwriter Laboratories
VTP	Vocational Training Provider
TVET	Technical and Vocational Education and Training