Model Curriculum

QP Name: Assembly Line Operator (Electronics Modules)

QP Code: ELE/Q4301

QP Version: 4.0

NSQF Level: 3

Model Curriculum Version: 4.0

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

Table of Contents

Training Parameters

Sector	Electronics
Sub-Sector	Electronics Manufacturing System
Occupation	Assembly-EMS
Country	India
NSQF Level	3
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7422.1901
Minimum Educational Qualification and Experience	10th grade or equivalent OR 8th grade with 3 years of relevant experience OR Certificate of NSQF level 2.5 with 1.5 years of relevant experienc # Relevant experience in Electronics Manufacturing System
Pre-Requisite License or Training	NA
Minimum Job Entry Age	NA
Last Reviewed On	07/10/2025
Next Review Date	07/10/2028
NSQC Approval Date	07/10/2025
QP Version	4.0
Model Curriculum Creation Date	07/10/2025
Model Curriculum Valid Up to Date	07/10/2028
Model Curriculum Version	4.0
Minimum Duration of the Course	390 Hours
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.

- Interpret assembly drawing/work instructions/SOPs for identification of material, tools and equipment required.
- Carry out kitting of tools, parts and modules for assembly of IT hardware.
- Carry out assembly of IT product.
- Carry out post-work operations such as testing, cleaning, inspection etc.
- Interact and coordinate with the supervisor and colleagues etc.
- Follow safe and healthy work practices.

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
ELE/N4301 - Perform kitting of modules for assembling	**30:00**	**90:00**	**00:00**	**30:00**	**150:00**
Module 1: Perform kitting of modules for assembling	30:00	90:00	00:00	30:00	150:00
ELE/N4302 - Assemble modules to complete equipment	**30:00**	**120:00**	**00:00**	**60:00**	**210:00**
Module 2: Assemble modulesto complete equipment	30:00	120:00	00:00	60:00	210:00
DGT/VSQ/N0101- Employability Skills (30 Hours)	**30:00**	**00:00**	**00:00**	**00:00**	**30:00**
Module 3: Employability Skills (30 Hours)	30:00	00:00	00:00	00:00	30:00
Total Duration	**90:00**	**210:00**	**00:00**	**90:00**	**390:00**

Module Details

Module 1: Perform kitting of modules for assembling

Mapped to ELE/N4301

Terminal Outcomes:

- Introduction to role and responsibilities of an Assembly Line Operator – IT Hardware
- Prepare for kitting of modules for assembling.
- Carry out kitting and assembly of modules.

Duration: *30:00*	**Duration**: *90:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe the role and responsibilities of an Assembly Line Operator – IT Hardware; explain the process of receiving, fitting, and assembling electronic and electromechanical modules into complete products by following standard operating procedures for various models. • Describe organisational process or procedure for assembly of a product. • Discuss the information derived from the engineering drawing, BOM, blueprints, job sheet etc. • Recall basic electronics involved in the hardware. • List different types of IT hardware products and functionalities. • Describe functions of electrical and mechanical parts/ modules. • List the tools, measuring instruments, equipment and components requiredduring assembling work. • Discuss the organisational process of collecting and arranging the tools, measuring instruments, equipment and components for assembly work. • Discuss the necessary precautions to avoid any hazard and accident during assemblingactivities. • Explain the safety mechanism, do's and don'ts of manufacturing process as per SOP. • List the steps to be performed for assembling the components of product as per drawing/WI. • List the steps to be performed for kitting the components and modules. • List modules required for assembling such as metal case for boxing, power supply, mother boards , other PCBs, displays, drivers, power supply, controllers, trays,fusers. • Use digital inventory systems and automated storage solutions to accurately kit components for assembly • Explain the process of escalating the problems faced during assembly activities to the supervisor or concerned authority. • Describe post-assembling processes likecleaning,	• Read the drawing, work orders, BOM etc. for identifying work requirements, selecting and planning sequence of assembly operations. • Demonstrate the standard operating procedure to use tools, measuring instruments, equipment and components required during assembling work. • Show how to collect the required tools,measuring instruments, equipment andcomponents from the store. • Show how to document the number of components and modules received and enter the inventory details in the internal process system as per company requirement example: SAP (ERP system). • Show how to segregate the components, modules, box and accessories as per SOP. • Apply appropriate ways to avoid any mismatch and wrong count of modules during kitting. • Demonstrate organisational procedure of assembling all the products and itscomponents as mentioned in drawing/ blueprint. • Show how to place and fix various parts i.e. processor, RAM, cooling fan, print head, components such as wire house, armature,bobbin etc. in the cabinet. • Apply appropriate ways to fasten the mechanical components/ subassembliestogether. • Show how to make the electrical connections of components with electrical panels by using wires strippers, crippling tool and other insulated tools. • Demonstrate organisational procedure of reporting defective or inadequate number of components and consumables in time. • Demonstrate post-assembly activities likecleaning, functionality check etc.

quality check etc. • Discuss various documents and records • need to be prepare and maintain related towork.	
Classroom Aids:	
Whiteboard, marker pen, computer or laptop attached to LCD projector, scanner, computerspeakers	
Tools, Equipment and Other Requirements	
Cable, Crimping Tool, Desktop, Digital Multimeter, Dot Matrix Printer, ESD Gloves, Ink Jet Printer, Insulation Tape, LanTester, Laptop, Lead Solder, Motherboard Diagnoser, Multi-Function Laser Printer, Network Switch, Post Cards, Router, Scanner, Screw Driver Set, Soldering Flux, Soldering Iron, job sheets, report formats	

Module 2: Assemble modules to complete equipment

Mapped to ELE/N4302

Terminal Outcomes:

- Carry out assembly of modules in component.

Duration: *30:00*	**Duration**: *120:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe organisational process or procedure for assembly of a IT hardware modules into complete equipment • Discuss the information derived from the engineering drawing, BOM, blueprints, job sheet etc. • Recall basic electronics involved in the hardware. • List different types of IT hardware products and functionalities. • Describe functions of electrical and mechanical parts/ modules. • List the tools, measuring instruments, equipment and components requiredduring assembling work. • Discuss the organisational process of collecting and arranging the tools, measuring instruments, equipment and components for assembly work. • Discuss the necessary precautions to avoid any hazard and accident during assemblingactivities. • Explain the safety mechanism, do's and don'ts of manufacturing process as per SOP. • List the steps to be performed for assembling the components of product as per drawing/WI. • List the steps to be performed for kitting the components and modules. • List modules required for assembling such as metal case for boxing, power supply, mother boards , other PCBs, displays, drivers, power supply, controllers, trays,fusers. • Explain the process of escalating the problems faced during assembly activities to the supervisor or concerned authority. • Describe post-assembling processes like cleaning, quality check etc.	• Read the drawing, work orders, BOM etc. for identifying work requirements, selecting and planning sequence of assembly operations. • Demonstrate the standard operating procedure to use tools, measuring instruments, equipment and components required during assembling work. • Show how to collect the required tools,measuring instruments, equipment andmodules. • Read the machine traveller sheet and ensure that the components in mother board are fixed. • Show how to document the number of components and modules received and enter the inventory details in the internal process system as per company requirement example: SAP (ERP system). • Show how to segregate the components, modules, box and accessories as per SOP. • Demonstrate organisational procedure of assembling all the modules together in a casing as mentioned in drawing/ blueprint. • Show how to place and connect various modules i.e. assembling for desktop, mother board, SMPS, Hard disk, Drivers, Wire connectors, LED display and PCB etc. in the casing. • Apply appropriate ways to fasten the mechanical components/ subassembliestogether. • Show how to place stickers and labels wherever applicable as per the product specification. • Show how to make the electrical connections of components with electrical panels by using wires strippers, crippling tool and other insulated tools. • Demonstrate organisational procedure of completing box assembly.

• Discuss various documents and records need to be prepare and maintain related to work.	• Demonstrate organisational procedure of reporting defective or inadequate number of components and consumables in time. • Demonstrate post-assembly activities like cleaning, functionality check etc.
Classroom Aids:	
Whiteboard, marker pen, computer or laptop attached to LCD projector, scanner, computer speakers	
Tools, Equipment and Other Requirements	
Cable, Crimping Tool, Desktop, Digital Multimeter, Dot Matrix Printer, ESD Gloves, Ink Jet Printer, Insulation Tape, LanTester, Laptop, Lead Solder, Motherboard Diagnoser, Multi-Function Laser Printer, Network Switch, Post Cards, Router, Scanner, Screw Driver Set, Soldering Flux, Soldering Iron, job sheets, report formats	

Module 3: 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**
• 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 4: On-the-Job Training

Mapped to Assembly Line Operator (Electronics Modules)

Mandatory Duration: *90:00*	**Recommended Duration**: *00:00*
Location: On Site	

Terminal Outcomes

1. Explain the fundamental concepts of electronics and electronics components
2. Identify tools and equipment required for preventive maintenance.
3. Prepare for kitting of modules for assembling.
4. Carry out kitting and assembly of modules
5. Carry out assembly of modules in component.
6. Interact and coordinate with supervisor and colleagues
7. Work as per the given timeline and quality standards
8. Maintain a safe, healthy and secure work environment

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
Diploma/ ITI/ Certified in relevant CITS Trade	Electronics	2	Electronics assembly line	1	Trainer	

Trainer Certification	
Domain Certification	**Platform Certification**
"**Assembly Line Operator (Electronics Modules)**, ELE/Q4301, version 4.0". Minimum accepted score is80%.	Recommended that the Trainer is certified for the **Assembly Line Operator (Electronics Modules)** "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***	
Diploma/ ITI/ Certified in relevant CITS Trade	Electronics	3	Electronics assembly line	2	Assessor	

Assessor Certification	
Domain Certification	**Platform Certification**
"**Assembly Line Operator (Electronics Modules)**, ELE/Q4301, version4.0". Minimum accepted score is 80%.	Recommended that the Assessor is certified for the **Assembly Line Operator (Electronics Modules)**, "Assessor (VET and Skills)", mapped to the Qualification Pack: "MEP/Q2701, V2.0", with minimum score of 80%

Assessment Strategy

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

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

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

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

5. Method of verification or validation:
    - Surprise visit to the assessment location
    - Random audit of the batch
    - Random audit of any candidate

6. Method for assessment documentation, archiving, and access
    - Hard copies of the documents are stored
    - Soft copies of the documents & photographs of the assessment are uploaded / accessed from Cloud Storage
    - Soft copies of the documents & photographs of the assessment are stored in the Hard Drives

References

Glossary

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.

Acronyms and Abbreviations

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