Model Curriculum

QP Name: Quality Manager - Electronics

QP Code: ELE/Q7902

QP Version: 3.0

NSQF Level: 6

Model Curriculum Version: 3.0

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	Communication & Broadcasting
Occupation	Quality Maintenance
Country	India
NSQF Level	6
Aligned to NCO/ISCO/ISIC Code	NCO-2015/1213.0102
Minimum Educational Qualification and Experience	Completed 4 year UG program (Physics/Electronics/Electrical/ Mechanical) with 3 Years of Relevant Experience OR Completed 3 year UG degree (Physics/Electronics/Electrical/ Mechanical) with 3 Years of Relevant Experience OR Completed 3 year diploma after 10th (Electronics/Electrical /Mechanical) with 4.5 years of Relevant Experience OR Previous relevant Qualification of NSQF Level (5.5) with 1.5 years of Relevant Experience #Relevant Exp in Electronics
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	01.05.2025
Next Review Date	30.04.2028
NSQC Approval Date	08.05.2025
QP Version	3.0
Model Curriculum Creation Date	01.05.2025
Model Curriculum Valid Up to Date	30.04.2028
Model Curriculum Version	3.0
Minimum Duration of the Course	660 Hours
Maximum Duration of the Course	660 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:

- Describe the process of managing quality in the product design process.
- Describe the process of managing the supplier relationship and receipt inspection process.
- Demonstrate the process of managing quality in the production process and final output.
- Describe the process of managing recruitment, training and drive quality initiatives.
- Explain the importance of following inclusive practices for all genders and PwD at work.
- Demonstrate various practices to be followed to maintain health and safety at work.

Compulsory Modules

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

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
ELE/N7906: Manage quality in the product design process	**66:00**	**54:00**	**90:00**	**00:00**	**210:00**
Module 1: Process of managing quality in the product design process	66:00	54:00	90:00	00:00	210:00
ELE/N7907: Manage the supplier relationship and receipt inspection process	**30:00**	**30:00**	**30:00**	**00:00**	**90:00**
Module 2: Process of managing the supplier relationship and receipt inspection process	30:00	30:00	30:00	00:00	90:00
ELE/N7908: Manage quality in the production process and final output	**30:00**	**60:00**	**30:00**	**00:00**	**120:00**

Module 3: Process of managing quality in the production process and final output	30:00	60:00	30:00	00:00	120:00
ELE/N7909: Manage recruitment, training and drive quality initiatives for projects	**60:00**	**60:00**	**60:00**	**00:00**	**180:00**
Module 4: Process of managing recruitment, training and drive quality initiatives	60:00	60:00	60:00	00:00	180:00
DGT/VSQ/N0102: Employability Skills (60 Hours)	**24:00**	**36:00**	**00:00**	**00:00**	**60:00**
Module 5: Employability Skills (60 Hours)	24:00	36:00	00:00	00:00	60:00
Total Duration	**210:00**	**240:00**	**210:00**	**00:00**	**660:00**

Module Details

Module 1: Process of managing quality in the product design process

Mapped to ELE/N7906

Terminal Outcomes:

- Describe the process of identifying the customer needs and concerns.
- Demonstrate the process of carrying out Advanced Product Quality Planning (APQP).

Duration: 66:00	Duration: 54:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe different methods of connecting with the target customers such as surveys, focus groups, social listening to understand their expectations/ concerns with the product offered by the organisation. • Elaborate the practice of collecting data and analyse it to draw reliable conclusions regarding customer expectations/ concerns. • Explain the importance and process of carrying out Advanced Product Quality Planning (APQP). • Elaborate how to prepare a plan and define the program as per the customer needs and expectations from the existing or proposed product(s). • Explain the importance of conducting production trial runs and testing the product output to confirm the effectiveness of the deployed manufacturing approach before launching full-scale production. • Explain the importance and process of identifying issues and start corrective actions to support continual improvement and reduce process variations. • Discuss the applicable legal and safety standards to be followed in the designing process.	• Demonstrate how to collect data and analyse it to draw reliable conclusions regarding customer expectations/ concerns. • Prepare a sample plan and define the program as per the customer needs and expectations from the existing or proposed product(s). • Dramatize how to prepare, review and verify the product design. • Demonstrate the process of carrying out Design Failure Mode and Effect Analysis (DFMEA) to assess the failure probabilities. • Dramatize how to design and develop the production process with a focus on product specifications, quality and production costs. • Perform production trial runs. • Demonstrate how to evaluate and test the product output to confirm the effectiveness of the deployed manufacturing approach.
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	

Tools, Equipment and Other Requirements
Flowchart, Check Sheet, Cause and Effect (Fish bone) Diagram, Pareto Chart, Control Charts, Histograms, Scatter Diagrams

Module 2: Process of managing the supplier relationship and receipt inspection process

Mapped to ELE/N7907

Terminal Outcomes:

- Explain the importance of managing the supplier relationship.
- Describe the process of managing receipt inspection.

Duration: 30:00	Duration: 30:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the importance of formulating quality standards for components and the process of monitoring their compliance by the supplier. • Explain the importance and process of training the supplier such as CAPA and train them to ensure the components they manufacture comply with the applicable quality and regulatory standards. • Elaborate different ways to minimise the time and cost of the inspection. • Explain the importance of receiving components from the supplier in a timely manner to avoid any negative impact on the company production process. • Elaborate how to detect deviations on part of the supplier in following the quality standards and taking corrective action promptly. • Describe the process of preparing an incoming inspection checklist setting the process and parameters to check the received components against. • Explain the importance of carrying out random sampling and the applicable industry sampling standards. • Explain the importance and process of carrying out critical tests to check the critical and technical parameters as per the product design provided by the design team. • Explain the importance of	• Demonstrate how to prepare the required training modules to train the supplier such as Corrective and Preventive Actions (CAPA) reporting. • Elaborate how to train the supplier to ensure the components they manufacture comply with the applicable quality and regulatory standards. • Demonstrate how to perform critical tests at the supplier's premises and verify the batches, if required. • Demonstrate how to prepare an incoming inspection checklist and setting the process and parameters to check the received components against, such as approved samples for comparison, Acceptance Quality Limit (AQL) etc. • Prepare sample records with respect to the approved and rejected batches.

maintaining accurate records with respect to the approved and rejected batches.	
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
Flowchart, Check Sheet, Cause and Effect (Fish bone) Diagram, Pareto Chart, Control Charts, Histograms, Scatter Diagrams	

Module 3: Process of managing quality in the production process and final output

Mapped to ELE/N7908

Terminal Outcomes:

- Describe the process of managing the quality in the production process.
- Demonstrate the process of evaluating the quality of output.
- Explain how to deal with output quality-related problems.
- Demonstrate the process of collecting and analysing data.

Duration: 30:00	Duration: 60:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the importance of ensuring that the personnel involved in the production process are trained in the use of relevant tools, equipment and Personal Protective Equipment (PPE). • Explain the importance of monitoring and evaluating the production process to ensure compliance with the defined quality standards. • Elaborate how to identify deviations in the production process and take appropriate corrective action. • Describe the process of developing and providing an Interim Corrective Action (ICA) plan to the production line to suggest rework or segregation in the existing stock when the production line experiences problems with components. • Describe the process of analysing the causes of the breakdown of tools, equipment and machineries and suggesting appropriate solutions. • Explain the use of 7 Quality Control (QC) tools i.e., Stratification, Histogram, Check sheet, Cause and effect diagram, Pareto chart, Scatter diagram, Control chart and Corrective Action Preventive Action (CAPA) to collect and analyse information, investigate product and quality-related key problems, control fluctuations in product quality and find the appropriate solutions to	• Dramatize the use of relevant tools, equipment and Personal Protective Equipment (PPE) • Dramatize the use of the 7 Quality Control (QC) tools and Corrective Action Preventive Action (CAPA) to collect and analyse information investigate product and quality-related key problems and find the appropriate solutions to avoid output defects. • Demonstrate the process of carrying out critical tests to ensure the product functions as expected. • Prepare a sample check sheet based on the observations during testing. • Perform analysis to identify and implement the appropriate corrective measures. • Dramatize how to collect statistical data with respect to the performance of the production line on the applicable quality parameters. • Demonstrate how to analyse the production line's statistical data to identify quality problems. • Prepare a sample variety of quality documentation. • Roleplay how to engage with customers and collect product feedback. • Demonstrate how to analyse the

avoid output defects. • Describe the process of investigation product and quality-related key problems, control fluctuations in product quality and finding appropriate solutions to avoid output defects. • Describe the process of evaluating the quality of output by conducting critical tests to ensure the product functions as expected. • Explain the importance of following the established process for auditing and testing the product with the participation of the relevant departments. • Describe the process of preparing a check sheet based on the observations during testing and approving/ rejecting the output. • Explain the importance of engaging with customers to collect product feedback and analysing the product return data to identify trends and specific.	product return and feedback data to identify trends and specific problems reported by the end- users.
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
Flowchart, Check Sheet, Cause and Effect (Fish bone) Diagram, Pareto Chart, Control Charts, Histograms, Scatter Diagrams	

Module 4: Process of managing recruitment, training and drive quality initiatives for projects

Mapped to ELE/N7909

Terminal Outcomes:

- Describe the process of recruiting the quality team personnel.
- Exhibit the process of conducting workshops and training.
- Explain how to drive quality initiatives.

Duration: 60:00	Duration: 60:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the importance of conducting research to identify ways to bridge the knowledge and skill gaps of the production and quality team personnel. • Describe the process of preparing the required training modules. • Describe the process of conducting workshop, classroom and shop floor training to ensure the quality and production team personnel are fully equipped to perform their duties. • Elaborate the process of collecting and analysing statistical data with respect to the performance of the production line on Describe the applicable quality parameters. • Describe the process of identifying problems and recommending appropriate changes in the production processes or quality controls. • Describe the process of developing and monitoring continuous improvement programs to reduce the number of defects, manufacturing costs and improve the overall quality of the output. • Explain the use of the lean manufacturing method to identify ways to optimise the usage of manpower and materials. • Elaborate the use of the six sigma methods to improve the business processes/ Standard Operating	• Roleplay how to conduct research to identify ways to bridge the knowledge and skill gaps of the production and quality team personnel. • Demonstrate how to prepare the required training modules. • Roleplay how to conduct workshop, classroom and shop floor training to ensure the quality and production team personnel are fully equipped to perform their duties. • Dramatize how to use the six sigma methods to improve the business processes/ Standard Operating Procedures (SOPs) in the organisation.

Procedures (SOPs). • Describe the process of reengineering the critical business processes to improve the quality of output and reduce production costs.	
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
Flowchart, Check Sheet, Cause and Effect (Fish bone) Diagram, Pareto Chart, Control Charts, Histograms, Scatter Diagrams	

Module 5: Employability Skills (60 Hours)

Mapped to DGT/VSQ/N0102

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: *24:00*	**Duration:** *36:00*
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.	• List different learning and employability related GOI and private portals and their usage • Show how to practice different environmentally sustainable practices. • Exhibit 21st century skills like Self-Awareness, Behavior Skills, time management, etc. • Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone • Demonstrate how to communicate in a well -mannered way with others. • Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette • Utilize virtual collaboration tools to workeffectively • Demonstrate how to maintain hygiene and dressing appropriately. • Perform a mock interview
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 6: On-the-Job Training

Mapped to Quality Manager - Electronics

Mandatory Duration: 210:00	Recommended Duration: 00:00
Location: On-Site	

Terminal Outcomes

1. Explain the process of identifying the customer needs and concerns.
2. Explain the applicable legal and safety standards to be followed in the designing process.
3. Prepare, review and verify the product design.
4. Prepare the required training modules to train the supplier such as Corrective and Preventive Actions (CAPA) reporting.
5. Carry out random sampling and the applicable industry sampling standards.
6. Carry out critical tests to ensure the product functions as expected.
7. Prepare check sheet based on the observations during testing.
8. Conduct workshop, classroom and shop floor training to ensure the quality and production team personnel are fully equipped to perform their duties.
9. Analyse the production line's statistical data to identify quality problems.
10. Prepare a variety of quality documentation.
11. Apply organisational protocol on data confidentiality and sharing only with the authorised personnel.
12. Use the protective equipment suitable as per tasks and work conditions.

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
BE/B.Tech/Certified in relevant CITS Trade	Electrical/Electronics/Mechanical	5	ESDM (Electronic System Design and Manufacturing)	2	Electronics	

Trainer Certification	
Domain Certification	**Platform Certification**
"**Quality Manager - Electronics**", "ELE/Q7902, v3.0", Minimum accepted score is 80%	Recommended that the Trainer is certified for the **Quality Manager - Electronics** "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***	
BE/B.Tech/Certified in relevant CITS Trade	Electrical/Electronics/Mechanical	7	ESDM (Electronic System Design and Manufacturing)	2	Electronics	

Assessor Certification	
Domain Certification	**Platform Certification**
"**Quality Manager - Electronics**", "ELE/Q7902, v3.0", Minimum accepted score is 80%	Recommended that the Assessor is certified for the **Quality Manager - Electronics** "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
    - The assessment agency deploys the ToA certified Assessor for executing the assessment
    - SSC monitors the assessment process & records
2. Testing Environment

    To ensure a conducive environment for conducting a test, the trainer will:
    - Confirm that the centre is available at the same address as mentioned on SDMS or SIP
    - Check the duration of the training.
    - Check the Assessment Start and End time to be 10 a.m. and 5 p.m. respectively
    - Ensure there are 2 Assessors if the batch size is more than 30.
    - Check that the allotted time to the candidates to complete Theory & Practical Assessment is correct.
    - Check the mode of assessment—Online (TAB/Computer) or Offline (OMR/PP).
    - Confirm the number of TABs on the ground are correct to execute the Assessment smoothly.
    - Check the availability of the Lab Equipment for the particular Job Role.
3. Assessment Quality Assurance levels / Framework:
    - Question papers created by the Subject Matter Experts (SME)
    - Question papers created by the SME verified by the other subject Matter Experts
    - Questions are mapped with NOS and PC
    - Question papers are prepared considering that levels 1 to 3 are for the unskilled & semi-skilled individuals, and levels 4 and above are for the skilled, supervisor & higher management
    - The assessor must be ToA certified and the trainer must be ToT Certified
    - The assessment agency must follow the assessment guidelines to conduct the assessment
4. Types of evidence or evidence-gathering protocol:
    - Time-stamped & geotagged reporting of the assessor from assessment location
    - Centre photographs with signboards and scheme-specific branding
    - Biometric or manual attendance sheet (stamped by TP) of the trainees during the training period
    - Time-stamped & geotagged assessment (Theory + Viva + Practical) photographs & videos
5. Method of verification or validation:

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

    To protect the assessment papers and information, the assessor will ensure:
    - Hard copies of the documents are stored

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

References

Glossary

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

Acronyms and Abbreviations

Term	Description
APQP	Advanced Product Quality Planning
AQL	Acceptance Quality Limit
CAPA	Corrective and Preventive Actions
ICA	Interim Corrective Action
ISO	International Organization for Standardization
NCO	National Occupational Standards
NOS	National Skills Qualification Committee
NSQF	National Skills Qualification Framework
OJT	On-the-Job Training
OMR	Optical Mark Recognition
PC	Performance Criteria
PwD	Persons with Disabilities
QC	Quality Control
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