Model Curriculum

QP Name: Automotive Quality Control Lead Inspector

QP Code: ASC/Q6305

QP Version: 2.0

NSQF Level: 5

Model Curriculum Version: 2.0

Automotive Skills Development Council | 153, Gr Floor, Okhla Industrial Area, Phase – III, Leela Building, New Delhi – 110020

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Training Parameters

Sector	Automotive
Sub-Sector	Manufacturing
Occupation	Automotive Quality Assurance
Country	India
NSQF Level	5
Aligned to NCO/ISCO/ISIC Code	NCO-2015/1213.0101
Minimum Educational Qualification and Experience	Diploma (Mechanical/Production/Manufacturing Engineering/Tool Engineering/Automobile) from a recognized body with 4 Years of relevant experience OR B.E./B.Tech (Mechanical/ Instrumentation & control engineering) with 1 Year of experience OR Certificate-NSQF (Automotive Quality Control Inspector Level 4) with 3 Years of experience
Pre-Requisite License or Training	NA
Minimum Job Entry Age	22 years
Last Reviewed On	29/07/2021
Next Review Date	29/07/2026
NSQC Approval Date	29/07/2021
QP Version	2.0
Model Curriculum Creation Date	29/07/2021
Model Curriculum Valid Up to Date	29/07/2026
Model Curriculum Version	2.0
Minimum Duration of the Course	520 Hours 00 Minutes
Maximum Duration of the Course	520 Hours 00 Minutes

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.

- Carry out calibration and validation of all testing and measuring equipment as per SOP.
- Carry out quality inspection activities such as inspection of automotive parts, products and processes, measuring dimensions of part and product, etc.
- Work effectively and efficiently as per schedules and timelines.
- Implement safety practices.
- Optimize the use of resources to ensure less wastage and maximum conservation.

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
Bridge Module					
Module 1: Introduction to the role of an Automotive Quality Control Lead Inspector	8:00	0:00			8:00
ASC/N9810: Manage work and resources (Manufacturing) NOS Version No. – 1.0 NSQF Level – 5	**24:00**	**32:00**			**56:00**
Module 2: Manage work and resources according to safety and conservation standards	24:00	32:00			56:00
ASC/N9812 – Interact effectively with team, customers and others NOS Version No. 1.0 NSQF Level 5	**24:00**	**32:00**			**56:00**
Module 3: Communicate effectively and efficiently	24:00	32:00			56:00
ASC/N6310 – Calibrate and maintain the quality of parts and processes NOS Version No. – 2.0 NSQF Level - 5	**134:00**	**266:00**			**400:00**
Module 4: Calibrate and maintain the quality of parts and processes	134:00	266:00			400:00
Total Duration	**190:00**	**330:00**			**520:00**

Module Details

Module 1: Introduction to the role of an Automotive Quality Control Lead Inspector

Bridge module

Terminal Outcomes:

- Discuss the role and responsibilities of an Automotive Quality Control Lead Inspector.

Duration: *<08:00>*	**Duration**: *<00:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• List the role and responsibilities of an Automotive Quality Control Lead Inspector. • Discuss the job opportunities of an Automotive Quality Control Lead Inspector. • Explain about Indian automotive manufacturing market. • List various automobile Original Equipment Manufacturers (OEMs) and different products/ models manufactured by them. • Discuss the standards and procedures involved in the different processes of quality inspection.	
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	

Module 2: Manage work and resources according to safety and conservation standards

Mapped to ASC/N9810, v1.0

Terminal Outcomes:

- Employ appropriate ways to maintain safe and secure working environment
- Apply material and energy conservation practices at the workplace.

Duration: *<24:00>*	**Duration**: *<32:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss organisational procedures for health, safety and security and individual role and responsibilities related to the same. • List the potential workplace related risks, threats and hazards, their causes and preventions. • List personal protective equipment like safety gloves, glasses, shoes and mask used at the workplace. • List various types of fire extinguisher. • Identify various safety boards/ signs placed on the shop floor. • Explain 5S standards, procedures and policies followed at workplace. • Discuss organisational procedures to deal with emergencies and accidents at the workplace and importance of following them. • State the importance of conducting safety drills or training sessions. • Explain the process of filling daily check sheet for reporting to the concerned authorities about improvements done and risks identified. • Discuss how and when to report about potential hazards identified in the workplace and limits of responsibility for dealing with them. • Outline the importance of keeping workplace, equipment, restrooms etc. clean and sanitised. • Explain the importance of following hygiene and sanitation regulations developed by organisation at the workplace.	• Apply appropriate ways to implement safety practices to ensure safety of people at the workplace. • Display the correct way of wearing and disposing PPE. • Demonstrate the use of fire extinguisher. • Demonstrate how to provide first aid procedure in case of emergencies. • Demonstrate how to evacuate the workplace in case of an emergency. • Employ various techniques for checking malfunctions in the machines with the support of maintenance team and as per Standard Operating Procedures (SOP). • Demonstrate to arrange tools/ equipment/ fasteners/ spare parts into proper trays, cabinets, lockers as mentioned in the 5S guidelines/work instructions. • Apply appropriate ways to organise safety drills or training sessions for others on the identified risks and safety practices. • Prepare a report about the health, safety and security breaches. • Apply appropriate ways to check that workplace, equipment, restrooms etc. are cleaned and sanitised. • Role play a situation to brief the team about the hygiene and sanitation regulations developed by organisation. • Demonstrate the correct way of washing hands using soap and water and alcohol-based hand rubs. • Apply appropriate methods to support the employees to cope with stress, anxiety etc.

• Discuss the importance of maintaining the availability of running water, hand wash and alcohol-based sanitizers at the workplace. • Discuss the significance of conforming to basic hygiene practices such as washing hands, using alcohol based hand sanitizers or soap. • Recall ways of reporting advanced hygiene and sanitation issues to the concerned authorities. • Elucidate various stress and anxiety management techniques. • Discuss the significance of greening. • Classify different categories of waste for the purpose of segregation. • Differentiate between recyclable and non-recyclable waste. • Discuss various methods of waste collection and disposal. • List the various materials used at the workplace. • Explain organisational recommended norms for storage of tools, equipment and material. • Discuss the importance of efficient utilisation of material and water. • Explain basics of electricity and prevalent energy efficient devices. • Explain the processes to optimize usage of material and energy/electricity. • Enlist common practices for conserving electricity at workplace.	• Demonstrate proper waste collection and disposal mechanism depending upon types of waste. • Perform the steps involved in storage of tools, equipment and material after completion of work. • Employ appropriate ways to resolve malfunctioning (fumes/ sparks/ emission/ vibration/ noise) and lapse in maintenance of equipment as per requirements. • Perform the steps to prepare a sample material and energy audit reports. • Employ practices for efficient utilization of material and energy/electricity.
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	
• Housekeeping material: Cleaning agents, cleaning cloth, waste container, dust pan and brush set, liquid soap, hand towel, fire extinguisher • Safety gears: Safety shoes, ear plug, goggles, gloves, helmet, first-aid kit	

Module 3: Communicate Effectively and Efficiently

Mapped to ASC/N9812, v1.0

Terminal Outcomes:

- Use effective communication and interpersonal skills.
- Apply sensitivity while interacting with different genders and people with disabilities.

Duration: *<24:00>*	**Duration**: *<32:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the importance of complying with organizational requirements to share information with team members. • Discuss the ways to adjust the communication styles to reflect sensitivity towards gender and persons with disability (PwD). • Explain the importance of respecting personal space of colleagues and customers. • Describe the ways to manage and coordinate with team members for work integration. • State the importance of team goals over individual goals, keeping commitment made to team members, and informing them in case of delays. • Discuss the importance of following the organisation's policies and procedures • Discuss the importance of rectifying errors as per feedback and minimizing mistakes. • Discuss gender-based concepts, issues and legislation as well organization standards, guidelines, rights and duties of PwD. • Discuss the importance of PwD and gender sensitization to ensure that team shows sensitivity towards them. • State the importance of following organizational standards and guidelines related to PwD. • Recall the rights and duties at workplace with respect to PwD. • Outline organisation policies and procedures pertaining to written and verbal communication.	• Employ different means and methods of communication depending upon the requirement to interact with the team members. • Employ appropriate ways to maintain good relationships with team members and superiors. • Apply appropriate techniques to resolve conflicts and manage team members for smooth workflow. • Conduct training sessions to train the team members on proper reporting of completed work and receiving feedback. • Employ suitable ways to escalate problems to superiors as and when required. • Prepare a sample report on the progress and team performance . • Role play a situation on how to offer help to people with disability (PwD) if required at work.
Classroom Aids:	
Whiteboard/blackboard, marker/chalk, duster, computer or Laptop attached to LCD projector	
Tools, Equipment and Other Requirements	

Module 4: Calibrate and maintain the quality of parts and processes

Mapped to ASC/N6310, v2.0

Terminal Outcomes:

- Prepare pan for the calibration and validation of all testing and measuring equipment.
- Carry out calibration, verification and validation of testing and measuring equipment.
- Demonstrate methods and techniques for quality inspection of automotive parts, products and related processes.
- Prepare and maintain documents and reports related to quality inspection work.

Duration: *<134:00>*	**Duration**: *<266:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss organisational quality inspection standards and processes. • Classify testing and measuring equipment as direct/indirect, precision/non-precision etc. • Discuss the information derived from the drawings, work order and SOPs. • Describe the selection criteria of standard instruments to be used for measurement during calibration process. • Discuss the safety practices to avoid any hazard and accident during quality inspection activities. • Summarise the steps to be performed for checking the calibration of tools, gauges and measuring instruments before use. • List QMS system guidelines followed in the organization. • Recall manufacturing process for each automotive part and product. • Describe Cp and Cpk studies. • Describe various validation techniques. • Explain Measurement Systems Analysis (MSA) and Repeatability and Reproducibility (R&R) gauge study procedure. • Explain ABQP and PPAP for new parts development. • List inspection checkpoints for the parts, product and process. • Explain ways of measuring the dimensions of automotive part or product. • Describe first principle method for verification of dimensions, profiles, parameters like surface finish, GD&T	• Demonstrate the standard operating procedures to use the testing equipment, gauges and measuring instruments such as vernier, micrometers, height gauge, surface plate and other precision equipment like surface roughness & CMM etc. required during the quality inspection process. • Role play a situation on how to receive measuring and testing equipment from vendors by following organisational procedures. • Perform the steps to prepare a sample plan for carrying out calibration, verification and validation of testing and measuring equipment as per organisational standards. • Show how to select the standard instruments to be used for measurement during calibration process. • Perform steps to conduct Measurement Systems Analysis (MSA) and Repeatability and Reproducibility (R&R) studies on all the measuring equipment. • Apply appropriate methods to inspect the details of dimensions, marking, material etc. as per the drawing. • Show how to discard or repair the measuring instruments on the basis of MSA and R&R readings and inspection reports. • Role play a situation on how to coordinate with the team to analyse the problems and implement counter measures pertaining to the equipment having R&R

parameters, CMM, gauges, machine/ fixture parameters in situ and mounted condition. • Discuss the records, reports and documents needed to be maintained and updated as per SOP. • Recall process of operating softwares like SAP, ERP etc.	outside the acceptable range • Perform the steps to prepare annual plan and schedule for conducting process and product audit. • Apply appropriate validation techniques to audit the regular and new parts and processes. • Role play a situation on how to discuss with process owners to resolve non-conformities identified in validation and correct or re-verify/re-validate the parts and processes. • Role play a situation to communicate the senior management about issues and seek support/feedback from them as per the requirements. • Demonstrate first principle method for verification of dimensions, profiles, parameters etc. of parts and processes. • Apply appropriate ways to inspect the layout of parts and processes as per the WI/SOP. • Show how to observe, analyze and co-relate the inspection results/defects with part results. • Role play a situation on how to co-ordinate with process owners to discuss about rectification of defects and re-inspection of parts and processes. • Role play a situation on how to co-ordinate with NPD department for preparing the schedule for gauge verification and validation. • Apply appropriate ways to inspect and validate the gauges/jigs and confirms that fit and tolerance, function usage are within the specified range or not.
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	
Vernier callipers, micrometer, surface plate, height gauge, dial stand with dial indicator, V block with clamps, slip gauge box, pin box, feeler gauge, roughness tester, profile projector, coordinate measuring machine, bore gauge, drawings of component, gauges & fixtures, references standards of PPAP, APQP, MSA, SPC PPEs such as safety gloves, glasses, helmet, shoes, mask	

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
ITI	Fitter/Turner	5	Quality	1	Quality	NA
Diploma	Mechanical/Automobile	4	Quality	1	Quality	**NA**
Diploma	Mechanical/Automobile	5	Quality	0	NA	**NA**
B.E / B.TECH	Mechanical/Automobile	4	Quality	0	NA	**NA**
M.E / M.TECH	Mechanical/Automobile	2	Quality	0	NA	**NA**

Trainer Certification	
Domain Certification	**Platform Certification**
"Automotive Quality Control Lead Inspector, ASC/Q6305, version 2.0". Minimum accepted score is 80%.	"Trainer, MEP/Q2601 v1.0" Minimum accepted score is 80%.

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training/Assessment Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
ITI	Fitter/Turner	6	Quality	1	Quality	NA
Diploma	Mechanical/Automobile	5	Quality	1	Quality	**NA**
Diploma	Mechanical/Automobile	6	Quality	0	NA	**NA**
B.E / B.TECH	Mechanical/Automobile	5	Quality	0	NA	**NA**
M.E / M.TECH	Mechanical/Automobile	3	Quality	0	NA	**NA**

Assessor Certification	
Domain Certification	**Platform Certification**
"Automotive Quality Control Lead Inspector, ASC/Q6305, version 2.0". Minimum accepted score is 80%.	"Assessor; MEP/Q2701 v1.0" Minimum accepted score is 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

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 Outcome	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 task. It is the ability to work, or produce a tangible work output by applying cognitive, affective or psychomotor skills.
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	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

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training
SOP	Standard Operating Procedure
WI	Work Instructions
PPE	Personal Protective equipment