# Model Curriculum

**QP Name: Automotive Quality Control Assistant**

**QP Code: ASC/Q6301**

**QP Version: 2.0**

**NSQF Level: 3**

**Model Curriculum Version: 1.0**

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** | 3 |
| **Aligned to NCO/ISCO/ISIC Code** | NCO-2015/3139.5001 |
| **Minimum Educational Qualification and Experience** | 8th Class Pass with 1 year of relevant experience<br>OR<br>8th Class Pass + ITI<br>OR<br>10th Class pass |
| **Pre-Requisite License or Training** | NA |
| **Minimum Job Entry Age** | 17 years |
| **Last Reviewed On** | 25/03/2021 |
| **Next Review Date** | 25/03/2026 |
| **NSQC Approval Date** | 25/03/2021 |
| **QP Version** | 2.0 |
| **Model Curriculum Creation Date** | 25/03/2021 |
| **Model Curriculum Valid Up to Date** | 25/03/2026 |
| **Model Curriculum Version** | 1.0 |
| **Minimum Duration of the Course** | 330 Hours 00 Minutes |
| **Maximum Duration of the Course** | 330 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 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** | **05:00** | **00:00** | | | **05:00** |
| Module 1: Introduction to the role of an Automotive Quality Control assistant | 5:00 | 0:00 | | | 5:00 |
| **ASC/N9803 – Organize work and resources (Manufacturing)<br>NOS Version No. – 1.0<br>NSQF Level – 3** | **15:00** | **30:00** | | | **45:00** |
| Module 2: Organize work and resources according to safety and conservation standards | 15:00 | 30:00 | | | 45:00 |
| **ASC/N9802 – Interact effectively with colleagues, customers and others<br>NOS Version No. – 1.0<br>NSQF Level - 3** | **15:00** | **25:00** | | | **40:00** |
| Module 3: Communicate effectively and efficiently | 15:00 | 25:00 | | | 40:00 |
| **ASC/N9805 – Interpret engineering drawing<br>NOS Version No. – 1.0<br>NSQF Level - 4** | **15:00** | **15:00** | | | **30:00** |
| Module 4: Interpret engineering drawing | 15:00 | 15:00 | | | 30:00 |
| **ASC/N6301 – Inspect automotive parts, products and processes quality<br>NOS Version No. – 2.0<br>NSQF Level - 3** | **90:00** | **120:00** | | | **210:00** |

| | | | | | |
|---|---|---|---|---|---|
| Module 5: Perform quality inspection of automotive parts, products and related processes | 90:00 | 150:00 | | | 240:00 |
| **Total Duration** | **140:00** | **190:00** | | | **330:00** |

# Module Details

## Module Name: Introduction to the role of an Automotive Quality Control Assistant

### *Bridge module*

**Terminal Outcomes:**

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

| **Duration**: *<05:00>* | **Duration**: *<00:00>* |
|---|---|
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| • List the role and responsibilities of an Automotive Quality Control Assistant.<br>• Discuss the job opportunities of an Automotive Quality Control Assistant.<br>• Explain about Indian automotive manufacturing market.<br>• List various automobile Original Equipment Manufacturers (OEMs) and different products/ models manufactured by them.<br>• 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 Name: Organize work and resources according to safety and conservation standards

### *Mapped to ASC/N9803 v1.0*

**Terminal Outcomes:**

- Employ appropriate ways to maintain safe and secure working environment.
- Perform work as per the quality standards.
- Apply conservation practices at the workplace.

| **Duration**: *<15:00>* | **Duration**: *<30:00>* |
|---|---|
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| • List the potential workplace related risks and hazards, their causes and preventions.<br>• Identify PPE to be used at workplace.<br>• Identify various warning signs used at the workplace.<br>• Describe appropriate strategies to deal with emergencies and accidents at the workplace.<br>• Outline the organizational structure to be followed to report about health, safety and security breaches to the concerned authorities.<br>• Discuss the importance of keeping work area clean and tidy.<br>• Discuss the significance of conforming to basic hygiene practices such as washing hands, using alcohol based hand sanitizers or soap.<br>• Discuss organizational hygiene and sanitation guidelines and ways of reporting breaches/gaps if any to the concerned authorities.<br>• Discuss the ways of dealing with stress and anxiety.<br>• Discuss how to complete the given work within the stipulated time period.<br>• Explain how to maintain a proper balance between team and individual goals.<br>• Explain 5S guidelines at workplace.<br>• List the various materials used at the workplace.<br>• Explain organisational recommended procedure for storage of tools, equipment and material after completion of work.<br>• Explain the ways to optimize usage of resources.<br>• Discuss various methods of waste management and its disposal.<br>• List the different categories of waste for the purpose of segregation<br>• Differentiate between recyclable and non-recyclable waste<br>• State the importance of using appropriate colour dustbins for different types of waste. | • Apply appropriate safety practices to ensure safety of people at the workplace<br>• Display the correct way of wearing and removing PPE such as face masks, hand gloves, face shields, PPE suits, etc.<br>• Demonstrate the use of fire extinguisher.<br>• Apply basic first aid procedure in case of emergencies.<br>• Perform routine cleaning of tools, equipment and machines.<br>• Employ various techniques for checking malfunctions in the equipment as per Standard Operating Procedure (SOP).<br>• Show how to sanitize and disinfect one's work area regularly.<br>• Demonstrate the correct way of washing hands using soap and water.<br>• Demonstrate the correct way of sanitizing hands using alcohol-based hand rubs.<br>• Demonstrate how to evacuate the workplace in case of an emergency.<br>• Demonstrate sorting of materials, tools and equipment and spare parts after completion of work.<br>• Demonstrate the steps involved in storage of tools, equipment and material after completion of work.<br>• Perform basic checks to identify any spills and leaks and that need to be plugged /stopped.<br>• Demonstrate different disposal techniques depending upon types of waste.<br>• Employ different ways to check if equipment/machines are functioning as per requirements and report malfunctioning, if observed.<br>• Employ ways for efficient utilization of material and water. |

| | |
|---|---|
| • Discuss common practices for conserving electricity at workplace.<br>• Discuss the common sources of pollution and ways to minimize it. | |
| **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<br>• Safety gears: Safety shoes, ear plug, goggles, gloves, helmet, first-aid kit | |

## Module 2

## Module Name: Communicate Effectively and Efficiently

## *Mapped to ASC/N9802 v1.0*

**Terminal Outcomes:**

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

| **Duration**: *<15:00>* | **Duration**: *<25:00>* |
|---|---|
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| • Explain the organizational structure for communicating with colleagues, seniors and others.<br>• Discuss the ways to adjust the communication styles to reflect sensitivity towards gender and persons with disability (PwD).<br>• Explain the importance of respecting personal space of colleagues.<br>• State the procedure to receive work instructions and report problems to the supervisor.<br>• List the various organizational policies and procedures to be followed at the workplace.<br>• Describe different ways to rectify commonly occurring errors.<br>• Explain the importance of complying with the instructions/guidelines and procedures while performing tasks related to the job specifications.<br>• Discuss the importance of PwD and gender sensitization. | • Employ different means of communication depending upon the requirement while interacting with others.<br>• Demonstrate using new ways to maintain good relationships with colleagues and supervisor.<br>• Prepare a sample report to send the work status to the supervisor.<br>• Demonstrate how to communicate with different genders and persons with disability (PwD) in a sensitive manner. |
| **Classroom Aids:** | |
| Whiteboard, marker pen, projector | |
| **Tools, Equipment and Other Requirements** | |
| Sample of escalation matrix, organisation structure. | |

## Module

## Module Name: Interpret engineering drawing

## *Mapped to ASC/N9805 v1.0*

**Terminal Outcomes:**

- Describe the basics of engineering drawing.
- Interpret the machine drawings and symbols for understanding the job requirements.

| **Duration: *<15:00>*** | **Duration: *<15:00>*** |
|---|---|
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| • Identify uniqueness, dimensioning and important features of 2D and 3D shapes.<br>• Identify types of lines, angles, points and their symmetry in shapes.<br>• Differentiate between first angle and third angle projection.<br>• Interpret 3 axis (x, y and z axis) of projection and machine symbols used in drawing.<br>• Describe GD&T and use of its symbols in the drawings.<br>• Identify required limits and tolerances of component from drawing.<br>• Explain standards used in India for making assembly drawings.<br>• Identify organisational drawing standards for interpreting the work requirements appropriately. | • Read an object in first angle and third angle projection.<br>• Demonstrate appropriate way of reading and interpreting the shapes (cones, cylinder, sphere, cuboid, etc) on to a 2D and 3D projection.<br>• Interpret and read orthographic and isometric views.<br>• Read GD&T symbols in the given drawing.<br>• Employ appropriate ways of storing the drawings in a defined and appropriate place.<br>• Role play a situation on how to communicate the changes in drawing to the concerned authority. |
| **Classroom Aids:** | |
| Whiteboard, marker pen, projector | |
| **Tools, Equipment and Other Requirements** | |
| • Drawing tools<br>• Machine drawing handbook<br>• Machine drawings | |

## Module

## Module Name: Perform quality inspection of automotive parts, products and related processes

### *Mapped to ASC/N6301 v2.0*

**Terminal Outcomes:**

- Identify testing equipment, measuring instruments, gauges, parts etc. required for quality inspection job.
- 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**: *<90:00>* | **Duration**: *<120:00>* |
|---|---|
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| • Discuss organisational quality inspection standards and processes.<br>• Discuss the information collected from the inspection check sheet about the inspection tasks and how to confirm it from the superior.<br>• Classify measuring instruments as direct/indirect, precision/non-precision etc, gauges.<br>• List testing equipment, measuring instruments, gauges, parts etc. required during the quality inspection process.<br>• Summarise the steps to be performed for checking the calibration of tools, gauges and measuring instruments before use.<br>• List QMS system guidelines followed in the organization.<br>• Recall manufacturing process for each automotive part and product.<br>• Explain methods and techniques of inspecting the quality of automotive parts, products and related processes.<br>• List inspection checkpoints for the parts, product and process.<br>• Explain ways of measuring the dimensions of automotive part or product.<br>• Elucidate the importance of maintaining and preserving the tested samples of automotive part or product as limit samples.<br>• Discuss inspection techniques to verify | • Demonstrate the standard operating procedures to use the testing equipment, measuring instruments, gauges, parts etc. required during the quality inspection process.<br>• Apply appropriate ways of checking the calibration of tools, gauges and measuring instruments before use.<br>• Show how to visually inspect the part or product for scratches, dents, damages, packing etc.<br>• Perform the steps to inspect the dimensions of part or product.<br>• Apply appropriate ways to maintain and preserve the tested samples of automotive part or product for future use.<br>• Show how to check the sticker/number/label of the inspected automotive part or product.<br>• Employ appropriate testing techniques like RCA and ABQP for inspecting and verifying the quality and effectiveness of automotive product and process.<br>• Apply appropriate inspection techniques to verify the process control items.<br>• Show how to raise scrap note and dispose scrapped part or product as per organisational guidelines.<br>• Demonstrate how to support QC inspector in preparation of first-off inspection report as per the process inspection standard/process parameter |

| | |
|---|---|
| the quality and effectiveness of automotive product and process.<br>• Discuss the safety practices to avoid any hazard and accident during quality inspection activities.<br>• Identify different methods for disposing off scrap.<br>• Discuss the records, reports and documents needed to be maintained and updated as per SOP.<br>• Recall process of operating softwares like SAP, ERP etc. | sheet/control plan.<br>•<br>• Prepare records, reports and documents related to quality inspection process as per SOP.<br>• Role play a situation on how to coordinate with the team to analyse the problems identified in inspection process.<br>• Demonstrate ways to maintain the data related to problems identified in inspection process.<br>• Dramatise how to coordinate with the process line leader/supervisor and implement corrective action for discrepancies identified in the inspection report. |
| **Classroom Aids:** | |
| Whiteboard, marker pen, projector | |
| **Tools, Equipment and Other Requirements** | |
| NG Parts With Known Dimension, Air Gauge Unit/Plugs/Rings, Apron, Bore Gauge, Centre Bench, Defective Samples, Dial Gauge/With Stand, Fixtures, Gauges, Height Gauge, Labels / Stickers, Sample Inspection Report Format, Limit Samples for Visual Defects, Manuals for SPC, APQP, MSA TS Standards, Micrometer, Ok Parts With Known Dimension, Parts (Within & Out Of Tolerance As Per Drawings), Plug ,Ring & Taper Go/No Go Gauges, Profile Gauge, Sample Parts, Screw Jack, Standard V Block/Magnetic, Surface Plate With Stand, Thread Plug/Ring Gauge, Tools, Vernier Caliper | |

# Annexure

## Trainer Requirements

| Trainer Prerequisites | | | | | | |
|---|---|---|---|---|---|---|
| **Minimum Educational Qualification** | **Specialization** | **Relevant Industry Experience** | | **Training Experience** | | **Remarks** |
| | | ***Years*** | ***Specialization*** | ***Years*** | ***Specialization*** | |
| ITI | Fitter/Turner | 3 | Automotive Manufacturing | 1 | Automotive Manufacturing | NA |
| ITI | Fitter/Turner | 4 | Automotive Manufacturing | 0 | Automotive Manufacturing | **NA** |
| Certificate NSQF- Level 5 | Automotive Quality lead Technician | 3 | Automotive Manufacturing | 1 | Automotive Manufacturing | **NA** |
| Diploma | Mechanical/Automobile | 2 | Mechanical/ Automobile | 1 | Mechanical/ Automobile | **NA** |
| Diploma | Mechanical/Automobile | 3 | Mechanical/ Automobile | 0 | Mechanical/ Automobile | **NA** |

| Trainer Certification | |
|---|---|
| **Domain Certification** | **Platform Certification** |
| "Automotive Quality Control Assistant, ASC/Q6301, version 2.0".<br>Minimum accepted score is 80%. | "Trainer, MEP/Q2601 v1.0"<br>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 | 4 | Automotive Manufacturing | 1 | Automotive Manufacturing | NA |
| ITI | Fitter/Turner | 5 | Automotive Manufacturing | 0 | Automotive Manufacturing | **NA** |
| Certificate NSQF- Level 5 | Automotive Quality lead Technician | 4 | Automotive Manufacturing | 1 | Automotive Manufacturing | **NA** |
| Diploma | Mechanical/Automobile | 3 | Mechanical/ Automobile | 1 | Mechanical/ Automobile | **NA** |
| Diploma | Mechanical/Automobile | 4 | Mechanical/ Automobile | 0 | Mechanical/ Automobile | **NA** |

| Assessor Certification | |
|---|---|
| **Domain Certification** | **Platform Certification** |
| "Automotive Quality Control Assistant, ASC/Q6301, version 2.0".<br>Minimum accepted score is 80%. | "Assessor; MEP/Q2701 v1.0"<br>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 |