



# Model Curriculum

**QP Name: Heavy Commercial Vehicle (HCV) Service Technician**

**QP Code: ASC/Q1432**

**QP Version: 1.0**

**NSQF Level: 4**

**Model Curriculum Version: 1.0**

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# Table of Contents

Training Parameters .....	3
Program Overview.....	4
Training Outcomes .....	4
Compulsory Modules.....	4
Module 1: Introduction to the role of a Heavy Commercial Vehicle (HCV) Service Technician.....	5
Module 2: Work effectively and efficiently.....	6
Module 3: Optimize resource utilization .....	8
Module 4: Communicate Effectively and Efficiently .....	9
Module 5: Perform routine service and repairing of a Heavy Commercial Vehicle .....	10
Annexure.....	12
Trainer Requirements .....	12
Assessor Requirements.....	13
Assessment Strategy.....	14
References .....	15
Glossary.....	15
Acronyms and Abbreviations .....	16

## Training Parameters

<b>Sector</b>	Automotive
<b>Sub-Sector</b>	Automotive Vehicle Service
<b>Occupation</b>	Technical Service & Repair
<b>Country</b>	India
<b>NSQF Level</b>	4
<b>Aligned to NCO/ISCO/ISIC Code</b>	NCO-2015/3115.0602
<b>Minimum Educational Qualification and Experience</b>	10th Class + 2 years ITI (Mechanic Motor Vehicle/Diesel Mechanic/Mechanic Auto Electrical and Electronics) OR 10th Class pass with 2 years relevant experience OR 12th Class pass with 1 year relevant experience OR Certificate-NSQF (Four Wheeler Service Assistant level 3) with 2 Years of relevant experience
<b>Pre-Requisite License or Training</b>	Driving License and Basic Computer Skills
<b>Minimum Job Entry Age</b>	18 years
<b>Last Reviewed On</b>	28/04/2022
<b>Next Review Date</b>	28/04/2025
<b>NSQC Approval Date</b>	28/04/2022
<b>QP Version</b>	1.0
<b>Model Curriculum Creation Date</b>	28/04/2022
<b>Model Curriculum Valid Up to Date</b>	28/04/2025
<b>Model Curriculum Version</b>	1.0
<b>Minimum Duration of the Course</b>	390 Hours 00 Minutes
<b>Maximum Duration of the Course</b>	390 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.

- Assist the lead technician in diagnosing and repairing faults in an electric vehicle.
- Perform routine service/maintenance/minor repairs of the heavy commercial vehicle.
- 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
<b>Bridge Module</b>	<b>00:00</b>	<b>00:00</b>	-	-	<b>00:00</b>
Module 1: Introduction to the role of a Heavy Commercial Vehicle (HCV) Service Technician	05:00	00:00	-	-	05:00
<b>ASC/N9801 - Organize Work and Resources (Service)</b> <b>NOS Version No. 1.0</b> <b>NSQF Level 4</b>	<b>15:00</b>	<b>30:00</b>	-	-	<b>45:00</b>
Module 2: Work effectively and efficiently	09:00	15:00	-	-	24:00
Module 3: Optimize resource utilization	06:00	15:00	-	-	21:00
<b>ASC/N9802 – Interact effectively with colleagues, customers and others</b> <b>NOS Version No. – 1.0</b> <b>NSQF Level – 3</b>	<b>15:00</b>	<b>25:00</b>	-	-	<b>40:00</b>
Module 4: Communicate effectively and efficiently	15:00	25:00	-	-	40:00
<b>ASC/N1453: Carry out routine service or minor repairs a heavy commercial vehicle and assist in diagnosis</b> <b>NOS Version No. – 1.0</b> <b>NSQF Level – 4</b>	<b>90:00</b>	<b>120:00</b>	-	-	<b>210:00</b>
Module 5: Perform routine service and repairs of a Heavy	90:00	120:00	-	-	210:00

Commercial Vehicle (HCV)					
<b>Total Duration</b>	<b>125:00</b>	<b>265:00</b>			<b>390:00</b>

## Module Details

### Module 1: Introduction to the role of a Heavy Commercial Vehicle (HCV) Service Technician

#### Bridge module

#### Terminal Outcomes:

- Discuss the role and responsibilities of a Heavy Commercial Vehicle (HCV) Service Technician.

<b>Duration:</b> <05:00>	<b>Duration:</b> <00:00>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>List the role and responsibilities of a Heavy Commercial Vehicle (HCV) Service Technician.</li> <li>Discuss the job opportunities for a Heavy Commercial Vehicle (HCV) Service Technician in the automobile industry.</li> <li>Explain about Indian auto manufacturing market.</li> <li>List various types of HCV's and different products/ models manufactured by Original Equipment Manufacturers(OEMs).</li> <li>Illustrate the workshop structure.</li> <li>Describe role and responsibilities of different people in the workshop.</li> <li>Discuss the maintenance standards and procedures followed in organisation.</li> <li>Identify the standard checklists and schedules recommended by OEM.</li> </ul>	
<b>Classroom Aids:</b>	
Whiteboard, marker pen, projector, standard checklists and schedules samples	
<b>Tools, Equipment and Other Requirements</b>	

## Module 2: Work Effectively and Efficiently

### Mapped to ASC/N9801, v1.0

#### Terminal Outcomes:

- Employ appropriate ways to maintain safe and secure working environment.
- Perform work as per the quality standards.

Duration: <09:00>	Duration: <15:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> <li>• Outline the organizational structure to be followed to report about health, safety and security breaches to the concerned authorities.</li> <li>• List the potential workplace related risks and hazards, their causes and preventions.</li> <li>• State the methods to keep the work area clean and tidy.</li> <li>• Discuss how to complete the given work within the stipulated time period.</li> <li>• Explain how to maintain a proper balance between team and individual goals.</li> <li>• Discuss epidemics and pandemics and their impact on society at large.</li> <li>• Discuss the significance of conforming to basic hygiene practices such as washing hands, using alcohol-based handsanitisers.</li> <li>• Discuss the use of proper PPE for maintaining health and hygiene at workplace and the process of wearing/discarding them.</li> <li>• Define self-quarantine or self-isolation.</li> <li>• Discuss the importance of identifying and reporting symptoms to the concerned authorities.</li> <li>• Explain the significance of following prescribed rules and guidelines during an epidemic or a pandemic.</li> <li>• Discuss organizational hygiene and sanitation guidelines and ways of reporting breaches/gaps if any.</li> <li>• Discuss the ways of dealing with stress and anxiety during an epidemic or a pandemic.</li> </ul>	<ul style="list-style-type: none"> <li>• Perform routine cleaning of tools, equipment and machines.</li> <li>• Employ various techniques for checking malfunctions in the equipment as per Standard Operating Procedure (SOP).</li> <li>• Apply basic housekeeping practices to ensure that the work area is clean, such as mopping spills and leaks, cleaning grease stains etc.</li> <li>• Demonstrate how to evacuate the workplace in case of an emergency.</li> <li>• Show how to sanitize and disinfect one's work area regularly.</li> <li>• Demonstrate the correct way of washing hands using soap and water.</li> <li>• Demonstrate the correct way of sanitizing hands using alcohol-based hand rubs.</li> <li>• Display the correct way of wearing and removing PPE such as face masks, hand gloves, face shields, PPE suits, etc.</li> <li>• Demonstrate appropriate social and behavioural etiquette (greeting and meeting people, spitting/ coughing/ sneezing, etc.).</li> <li>• Prepare a list of relevant hotline/ emergency numbers.</li> </ul>
<b>Classroom Aids:</b>	

Whiteboard, marker pen, projector

**Tools, Equipment and Other Requirements**

- **Personal Protection Equipment:** safety glasses, head protection, rubber gloves, safety footwear, warning signs and tapes, fire extinguisher and first aid kit
- Sanitization kit, disinfectants, alcohol-based sanitizers, different types of face masks, shields, suits, etc.

## Module 3: Optimize Resource Utilization

### Mapped to ASC/N9801, v1.0

#### Terminal Outcomes:

- Use the resources efficiently.
- Apply conservation practices at the workplace.

<b>Duration: &lt;06:00&gt;</b>	<b>Duration: &lt;15:00&gt;</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Explain the ways to optimize usage of resources.</li> <li>• Discuss various methods of waste management and its disposal.</li> <li>• List the different categories of waste for the purpose of segregation</li> <li>• Differentiate between recyclable and non-recyclable waste</li> <li>• State the importance of using appropriate colour dustbins for different types of waste.</li> <li>• Discuss the common sources of pollution and ways to minimize it.</li> </ul>	<ul style="list-style-type: none"> <li>• Perform basic checks to identify any spills and leaks and that need to be plugged /stopped.</li> <li>• Demonstrate different disposal techniques depending upon different types of waste.</li> <li>• Employ different ways to check if equipment/machines are functioning as per requirements and report malfunctioning, if observed.</li> <li>• Employ ways for efficient utilization of material and water</li> <li>• Use energy efficient electrical appliances and devices to ensure energy conservation</li> </ul>
<b>Classroom Aids:</b>	
White board/black board marker/chalk, duster, computer or Laptop attached to LCD projector	
<b>Tools, Equipment and Other Requirements</b>	
Different type of waste bins to collect and segregate waste for disposal	



## Module 4: 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.

<b>Duration:</b> <15:00>	<b>Duration:</b> <25:00>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Explain the organizational structure for communicating with colleagues, seniors and others.</li> <li>• Discuss the ways to adjust the communication styles to reflect sensitivity towards gender and persons with disability (PwD).</li> <li>• Explain the importance of respecting personal space of colleagues.</li> <li>• State the procedure to receive work instructions and report problems to the supervisor.</li> <li>• List the various organizational policies and procedures to be followed at the workplace.</li> <li>• Describe different ways to rectify commonly occurring errors.</li> <li>• Explain the importance of complying with the instructions/guidelines and procedures while performing tasks related to the job specifications.</li> <li>• Discuss the importance of PwD and gender sensitization.</li> </ul>	<ul style="list-style-type: none"> <li>• Employ different means of communication depending upon the requirement while interacting with others.</li> <li>• Demonstrate using new ways to maintain good relationships with colleagues and supervisor.</li> <li>• Prepare a sample report to send the work status to the supervisor.</li> <li>• Demonstrate how to communicate with different genders and persons with disability (PwD) in a sensitive manner.</li> </ul>
<b>Classroom Aids:</b>	
Whiteboard, marker pen, projector	
<b>Tools, Equipment and Other Requirements</b>	
Sample of escalation matrix, organisation structure.	

## Module 5: Perform routine service and repairing of a Heavy Commercial Vehicle (HCV)

*Mapped to ASC/N1453, v1.0*

### Terminal Outcomes:

- Identify tools and equipment required for servicing and repairing.
- Demonstrate preparatory activities for diagnosing faults and repairing of a HCV.
- Demonstrate how to use different techniques for diagnosing faults and repairing the a HCV.

Duration: <90:00>	Duration: <210:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> <li>• List various components /aggregates and the manufacturer's specifications of a HCV.</li> <li>• Discuss basic technology used, functioning and interconnections of various systems and components of a HCV.</li> <li>• Recall fundamental terms, laws and principles of electricity used in HCV.</li> <li>• Explain legal regulations that need to be taken into account for handling electric vehicles.</li> <li>• Elucidate SOP for receiving vehicles, opening job card, allocation of work, invoicing, vehicle delivery, handling complaints, etc.</li> <li>• Discuss various sources of information available for assessing service and repair requirements of the vehicle.</li> <li>• Discuss standard schedules and checklists recommended by the OEM/ auto component manufacturer for servicing of heavy commercial vehicles.</li> <li>• List the types of tools and equipment used in different processes of a HCV maintenance.</li> <li>• List the activities need to perform for preparing a HCV for fault identification and repairing work.</li> <li>• Discuss the safety precautions need to follow during servicing and repairing of an HCV.</li> <li>• Discuss the symptoms of technical faults, their causes and rectification procedures in HCV.</li> <li>• Describe organizational/professional code of ethics and standards of practice.</li> <li>• Discuss the documents to be maintained w.r.t inspection, troubleshooting and</li> </ul>	<ul style="list-style-type: none"> <li>• Analyse the job card to plan diagnostic activities as per the complaints mentioned in the job card.</li> <li>• Show how to collect workshop tools/ measuring devices/ equipment required for the job.</li> <li>• Apply appropriate ways to check the defects and calibration of tools/ measuring devices/ equipment before use.</li> <li>• Employ appropriate techniques to place the Heavy Commercial Vehicle (HCV) on suitable platform in the workshop designated as service/repair area.</li> <li>• Demonstrate how to use tools and equipment for inspection and repairing of faults in a HCV.</li> <li>• Demonstrate how to use computer, on-line application and OEM technical information/assistance portals.</li> <li>• Demonstrate how to check the electric vehicle for the service and repair requirements based on the job card.</li> <li>• Perform steps to report about malfunctions/repairs in the HCV beyond own scope to the concerned person.</li> <li>• Demonstrate how to conduct test drive of a HCV for assessing any servicing and repairing requirements by following instructions of Lead Service Technician.</li> <li>• Apply appropriate ways to check the inspect/test HCV system/component performance and for any faults.</li> <li>• Demonstrate how to test and inspect vehicle mechanical and electrical systems by following instructions of Lead Service Technician.</li> <li>• Apply appropriate ways to interpret and compare results of diagnostic inspections/</li> </ul>

<p>diagnosis of faults.</p> <ul style="list-style-type: none"> <li>Explain the health and safety measures and regulations w.r.t. equipment and components during fault diagnosis.</li> </ul>	<p>tests with vehicle specifications and regulatory requirements.</p> <ul style="list-style-type: none"> <li>Prepare a report on the results of diagnosis or troubleshooting for lead technician by following organisational procedures.</li> <li>Employ various precautions and safety measures to ensure that no damage is caused to the vehicle during diagnosis.</li> <li>Demonstrate how to test electrical and electronic systems of a HCV by following SOP.</li> <li>Demonstrate how to dismantle the mechanical parts and systems of a HCV.</li> <li>Show how to clean and condition dismantled mechanical and electrical components of a HCV.</li> <li>Demonstrate how to perform service and repairing activities on the mechanical system of an HCV.</li> <li>Apply appropriate ways to check the performance of H C V / aggregate post repair.</li> <li>Show how to return leftover components and tools to store and dispose waste material after completion of work by following organisational policies and procedures.</li> </ul>
<b>Classroom Aids:</b>	
Whiteboard, marker pen, projector	
<b>Tools, Equipment and Other Requirements</b>	
<ul style="list-style-type: none"> <li>PPT's, teaching aids, job card, Heavy commercial vehicle</li> <li>Vehicle, various body parts, engine, tools and equipment, material, consumables, components/aggregates, lubricants, grease, oil, etc.</li> <li>Pressure indicators: fuel pressure testers, manifold gauge sets, oil pressure gauges, tire pressure gauges etc., pullers: ball joint separators, bearing pullers, gear puller tools, slide hammers etc., trim or moulding tools: carbon scrapers, gasket scrapers, scrapers, spoons etc., measuring equipment: vernier calipers, micrometre, feeler gauges, multi-metre, flow metre, temp gauge, dial gauge etc., other tools: hand tools, power tools, lifting/jacking equipment, tensioning equipment, security activator etc., tools for other tasks such as cleaning of vehicles, brake bleeding, wheel alignment, AC gas charging etc.</li> <li><b>Safety materials:</b> Fire extinguisher, safety gloves, aprons, safety glasses, helmet, safety shoe and first-aid kit</li> <li><b>Cleaning material:</b> Tip cleaner, wire brush (M.S.), cleaning agents, cleaning cloth, waste container, dust pan and brush set, liquid soap, hand towel</li> </ul>	

# Annexure

## Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
ITI	Mechanic Motor Vehicle/Mechanic Auto Electrical and Electronics/Diesel Mechanic	4	Heavy Commercial Vehicle Service	1	Heavy Commercial Vehicle Service	NA
ITI	Mechanic Motor Vehicle/Mechanic Auto Electrical and Electronics/Diesel Mechanic	5	Heavy Commercial Vehicle Service	0	Heavy Commercial Vehicle Service	NA
Diploma	Automobile Engineering/Mechanical Engineering	3	Heavy Commercial Vehicle Service	1	Heavy Commercial Vehicle Service	NA
Diploma	Automobile Engineering/Mechanical Engineering	4	Heavy Commercial Vehicle Service	0	Heavy Commercial Vehicle Service	NA
Certificate NSQF- Level 6	Four Wheeler Master Technician	3	Heavy Commercial Vehicle Service	1	Heavy Commercial Vehicle Service	NA

Trainer Certification	
Domain Certification	Platform Certification
"Heavy Commercial Vehicle (HCV) Service Technician, ASC/Q1432, version 1.0". 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 Experience		Remarks
		Years	Specialization	Years	Specialization	
ITI	Mechanic Motor Vehicle/Mechanic Auto Electrical and Electronics/Diesel Mechanic	5	Heavy Commercial Vehicle Service	1	Heavy Commercial Vehicle Service	NA
ITI	Mechanic Motor Vehicle/Mechanic Auto Electrical and Electronics/Diesel Mechanic	6	Heavy Commercial Vehicle Service	0	Heavy Commercial Vehicle Service	NA
Diploma	Automobile Engineering/Mechanical Engineering	4	Heavy Commercial Vehicle Service	1	Heavy Commercial Vehicle Service	NA
Diploma	Automobile Engineering/Mechanical Engineering	5	Heavy Commercial Vehicle Service	0	Heavy Commercial Vehicle Service	NA
Certificate NSQF- Level 6	Four Wheeler Master Technician	4	Heavy Commercial Vehicle Service	1	Heavy Commercial Vehicle Service	NA

Assessor Certification	
Domain Certification	Platform Certification
"Heavy Commercial Vehicle (HCV) Service Technician, ASC/Q1432, version 1.0". 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
<b>Declarative Knowledge</b>	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.
<b>Key Learning Outcome</b>	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).
<b>OJT (M)</b>	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site
<b>OJT (R)</b>	On-the-job training (Recommended); trainees are recommended the specified hours of training on site
<b>Procedural Knowledge</b>	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.
<b>Training Outcome</b>	Training outcome is a statement of what a learner will know, understand and be able to do upon the completion of the training.
<b>Terminal Outcome</b>	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

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