Model Curriculum

QP Name: Four Wheeler Service Master Technician

QP Code: ASC/Q1404

QP Version: 2.0

NSQF Level: 6

Model Curriculum Version: 1.0

Automotive Skills Development Council
Leela Building, 153 GF, Okhla Phase III, Okhla Industrial Area, New Delhi, Delhi 110020

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Training Parameters

Sector	Automotive
Sub-Sector	Automotive Vehicle Service
Occupation	Technical Service & Repair
Country	India
NSQF Level	6
Aligned to NCO/ISCO/ISIC Code	NCO-2015/3115.0602
Minimum Educational Qualification & Experience	10th Class + I.T.I (Mechanic Auto Electrical and Electronics/ Mechanic Diesel/ Mechanic Motor Vehicle (MMV)) with 4 Years of relevant experience OR 3 years Diploma (Automobile/Mechanical Electrical/Electronics) from recognized regulatory body with 3 Year of relevant experience after Class 12th OR Certificate-NSQF (Four Wheeler Service Lead Technician Level 5) with 3 Years of relevant Experience
Pre-Requisite License or Training	Permanent driving Licence
Minimum Job Entry Age	20 Years
Last Reviewed On	30/09/2021
Next Review Date	30/09/2024
NSQC Approval Date	30/09/2021
Version	2.0
Model Curriculum Creation Date	30/09/2021
Model Curriculum Valid Up to Date	30/09/2024
Model Curriculum Version	1.0
Minimum Duration of the Course	630 Hours, 0 Minutes
Maximum Duration of the Course	630 Hours, 0 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.

- Plan and manage work and resources efficiently ensuring least wastage and optimal usage.
- Supervise team to ensure implementation safety practices.
- Communicate effectively and develop interpersonal skills with others.
- Display sensitivity towards all genders and differently abled people.
- Employ ways to assist while performing repair and overhauling in mechanical/electrical/electronic vehicle systems.
- Perform required post service/repair activities.
- Carry out inspection for faults in the vehicle to identify correct root cause and provide repair solutions.
- Supervise the team in ensuring periodic maintenance/monitoring of the tools and equipment including special purpose also.

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 a Four Wheeler Service Master Technician *Bridge Module*	05:00	00:00	-	-	05:00
ASC/N9813 - Manage work and resources **NOS Version No. 1.0** **NSQF Level 6**	**20:00**	**40:00**	-	-	**60:00**
Module 2: Plan work effectively, implement safety practices and optimize resources	20:00	40:00	-	-	60:00
ASC/N9812 – Interact effectively with team, customers and others **NOS Version No. 1.0** **NSQF Level 6**	**20:00**	**35:00**	-	-	**55:00**
Module 3: Communicate effectively and efficiently	20:00	35:00	-	-	55:00

ASC/N1407: Perform advanced fault diagnosis on vehicle **NOS Version No. 2.0** **NSQF Level 6**	**60:00**	**150:00**	-	-	**210:00**
Module 4: Advanced Fault Diagnosis on Vehicle	60:00	150:00	-	-	210:00
ASC/N1409: Assist lead technician in mechanical/ electrical/electronic repairs and overhauling **NOS Version No. 2.0** **NSQF Level 6**	**60:00**	**120:00**	-	-	**180:00**
Module 5: Repairs and Overhauling Supervision	60:00	120:00	-	-	180:00
ASC/N1444: Maintain the tools and equipment **NOS Version No. 1.0** **NSQF Level 6**	**30:00**	**90:00**	-	-	**120:00**
Module 6: Tools and Equipment Maintenance	30:00	90:00	-	-	120:00
Total Duration	**195:00**	**435:00**	-	-	**630:00**

Module Details

Module 1: Introduction to the Role of a Four Wheeler Service Master Technician
Bridge Module

Terminal Outcomes:

- Discuss the role and responsibilities of **a** Four Wheeler Service Master Technician.

Duration: *05:00*	**Duration**: *00:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• List the role and responsibilities of **a** Four Wheeler Service Master Technician. • Explain about automotive industry in India, workshop structure and role and responsibilities of different people in the workshop. • Elaborate standard operating procedures (SOPs) regarding receiving vehicles, opening job card, allocation of work, invoicing, vehicle delivery, handling complaints etc. • Recall the documentation involved in the different processes as specified by OEM/ auto component manufacturer. • Discuss the importance of inspection and diagnosis of faults by optimum utilization of tools and equipment as per SOP. • Discuss the importance of working as per organisational policies, professional code of ethics and standards of practice. • Outline the safety, health and environmental policies and regulations for the work place as well as for automotive trade in general. • Discuss occupational health and safety measures (OSH) required for working on vehicles. • Discuss the legal regulations pertaining to vehicles.	
Classroom Aids:	
Laptop, white board, marker, projector	
Tools, Equipment and Other Requirements	

Module 2: Plan Work Effectively and Implement Safety Practices
Mapped to NOS ASC/N9813, v1.0

Terminal Outcomes:

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

Duration: *20:00*	**Duration**: *40:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• List the potential workplace related risks and hazards, their causes and preventions. • Outline the organizational structure to be followed to report about health, safety and security breaches to the concerned authorities. • Describe the procedures to report accident and health related issues as per SOP • Identify the importance of standard operating procedures of the company w.r.t. privacy, confidentiality and security. • List and explain work requirements to be followed by the team. • List some common practices for efficient utilisation of energy, material and water. • Discuss the specified quality standards for work requirements and corrective action to be taken in case work fails to meet the requirements. • Discuss the importance of conducting trainings to develop work expertise. • Discuss the importance of working as per the agreed and assigned requirement. • Identify the issues with process flow improvements, quality of output, product defects received from previous process, repairs and maintenance of tools and machinery and handle them • Define ways to optimize usage of resources • Discuss different set of problems along with their causes and possible solutions.	• Apply appropriate techniques in the work process to save cost and time. • Employ ways to ensure that the team complies with organisation's health, safety policies and procedures. • Keep a check on the routine cleaning of tools, machine and equipment. • Employ different ways to ensure that the team periodically checks tools, equipment and machines. • Apply appropriate techniques to use the resources judiciously. • Demonstrate checking for malfunctions in equipment and report as per SOP • Employ ways to ensure that the team periodically checks for spills and leaks and plugs the same and keeps work area clean and tidy. • Demonstrate segregation of hazardous waste. • Show how to dispose non-recyclable waste and hazardous waste responsibly. • Demonstrate how to follow the organisation's emergency procedures for different emergencies. • Prepare a sample layout of the workshop depicting the location of all the electrical, hydraulic and thermal equipment used.

• Discuss the concept of waste management and methods of waste disposal • List the different categories of waste for the purpose of segregation • State the importance of timely completion of tasks • Discuss the significance of sanitizing the workplace, equipment etc. • Summarise hygiene and sanitation regulations. • Discuss the ways of helping team members deal with stress and anxiety • Explain various ways of time and cost management • Discuss the use of proper PPE for maintaining health and hygiene at workplace and the process of wearing/discarding them. • List some common electrical problems and practices of conserving electricity. • State the importance of using appropriate colour dustbins for different types of waste. • Discuss organizational procedures for minimizing waste. • Discuss the importance of maintaining quality and timely delivery of the services as per the goals set by the manager. • Discuss the common sources of pollution and ways to minimize it. • Discuss organisation's policies for maintaining personal health and hygiene at workplace. • Discuss the significance of greening. • List the requirements like running water, sanitizers, etc. to be checked beforehand at workplace. • Recall the key performance indicators for the new tasks.	

Classroom Aids:
White board/ black board marker / chalk, duster, computer or Laptop attached to LCD 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

Module 3: Communicate Effectively and Efficiently

Mapped to NOS ASC/N9812, v1.0

Terminal Outcomes:

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

Duration: *20:00*	**Duration**: *35:00*
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:	

White board/black board marker/chalk, duster, computer or Laptop attached to LCD projector
Tools, Equipment and Other Requirements

Module 4: Advanced Fault Diagnosis on Vehicle
Mapped to NOS ASC/N1407, *v2.0*

Terminal Outcomes:

- Perform steps to inspect and validate faults in the vehicle to arrive at a root cause.
- Employ techniques for providing a repair solution for the faults.

Duration: *60:00*	**Duration**: *150:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe different auto components/aggregates along with their manufacturer's specifications. • Analyse the job card and other details to verify fault information along with noting vehicle condition in case of temporary fault. • Describe the technology used and functioning of various electrical, mechanical systems of the vehicle and their integration with each other along with the effect of one system on other systems. • Discuss fundamental terms, laws/principles used in vehicles, automotive communication protocols and various electrical and electronic signals. • List the observations to recommend required assessments to check the performance of alleged component of vehicle system. • Explain how to inform about any new premature failure/malfunctions/repair without any previously available resolution by respective OEM or component manufacturer. • Discuss how to justify and confirm final plan for required repair/replacement, repairing process and time. • Discuss how to use appropriate measuring device/equipment and interpret mathematical calculations. • Explain symbols, units and terms used in wiring diagrams related to electrical/electric systems/components of the vehicle. • Discuss how to use computer, on-line application and OEM technical information/assistance portals.	• Demonstrate how to check the functioning of vehicle systems to identify the abnormalities due to recorded fault. • Implement ways to handle vehicle inspection/test drive for visual defects based on nature of fault which can validate the noted fault. • Demonstrate how to figure out symptoms and exact fault location in vehicle systems including proof collection such as photographs, audio/video recording, environmental data of electronic control units (ECUs) etc. • Supervise lead technician to conduct tests using various diagnostic tools to identify faulty component or root cause of the fault as per troubleshooting SOPs. • Manage lead technician to perform required vehicle inspections/troubleshooting documentation. • Suggest possible repair resolution by using vehicle or component specification, checklists, diagnostic manual, technical information, etc. • Demonstrate how to understand required inspection, measurement/test results and compare them with vehicle specifications and regulatory requirements.

• Discuss how to use various available sources of information to evaluate service/repair requirements. • List industry standards essential for inspection and fault reporting in different formats. • Discuss common indications of regular faults and failures in vehicle systems. • List OEM safety requirements to work in hazardous environments and manage tool/equipment, hazardous substances. • Discuss Standard Operating Procedures (SOPs) of the organization/ dealership set by OEM/components manufacturer for vehicle fault inspection/diagnosis and using required tools/equipment for diagnosis/ troubleshooting. • Identify various types of errors or defects in the tools/equipment.	
Classroom Aids:	
White board/ black board marker / chalk, duster, computer or Laptop attached to LCD projector	
Tools, Equipment and Other Requirements	
Reports, job cards, documents used in the dealership/workshop, repair/diagnosis tools/equipment	

Module 5: Repairs and Overhauling Supervision
Mapped to NOS ASC/N1409, *v2.0*

Terminal Outcomes:

- Provide assistance to perform repair and overhauling in mechanical/electrical/electronic systems of the vehicle.
- Carry out post service/repair activities.

Duration: *60:00*	**Duration**: *120:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Analyse the job card, vehicle service history, inspection report, etc. in order to confirm any repair requirement. • Explain use of PPE as per the job requirement. • Discuss required precautions while working to avoid any damage to the vehicle and its components. • Explain usage of tools/equipment related to mechanical electrical/electronic systems including special service tools, based diagnostic equipment, etc.as per OEM SOP. • Discuss OEM SOPs recommended for service, repair and overhauling of the vehicle aggregates. • Explain standard schedules and checklists suggested by the OEM/auto component manufacturer for vehicle component/aggregate servicing. • Discuss different methods removal, dismantling, cleaning, adjusting, reassembling and testing of vehicle components for their proper functioning. • Describe different types and quality of consumables/materials used in different processes.	• Demonstrate how to carry out visual inspection for defect assessment. • Supervise the lead technician to collect right service/repair manual and follow the required SOP. • Implement ways to handle collection of required workshop tools/measuring devices/equipment/spare parts/consumable as per calibration stated by respective OEM. • Manage proper placement of tools/equipment to maintain safe and organized workstation. • Supervise that OEM SOP and standard safety procedures are followed while working in hazardous environments and handling tool/equipment, vehicle component, fluids, hazardous substances. • Demonstrate how to remove parts appropriate to various aggregates along with their secure placement and post removal testing of components as per OEM SOP. • Manage cleaning of dismantled components before assembling, including mechanical and electrical aggregates. • Provide support to lead technician to carry out repair/replacement/calibration/overhauling of components/aggregate including power assisted braking & steering systems. • Demonstrate how to rectify indirect faults in mechanical aggregate due to another system/component. • Supervise the maintenance of vehicle repair/overhaul documentation. • Implement ways to verify post repair performance of vehicle/aggregate and

	report supervisor/service advisor in case of any other requirement of inspection/repair. • Verify completion of all allotted tasks before releasing the vehicle for the next process. • Supervise disposal of materials/scrap of four-wheeler as per organisation's policies • Manage scheduled checks, calibration and timely repairs for workshop tools, equipment and workstations along with their removal from the work site on work completion. •
Classroom Aids:	
White board/ black board marker / chalk, duster, computer or Laptop attached to LCD projector	
Tools, Equipment and Other Requirements	
Reports, job cards, documents used in the dealership/workshop, hand tools, power tools, special service tools, measuring instruments, workshop equipment, demo vehicle, aggregates etc.	

Module 6: Tools and Equipment Maintenance
Mapped to NOS ASC/N1444, *v1.0*

Terminal Outcomes:

- Perform steps to carry out tools and equipment maintenance activity.
- Carry out monitoring of special purpose tools/equipment usage.

Duration: *30:00*	**Duration**: *90:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Identify and report shortfall/ missing/damage tools or equipment, new product launch and vehicular population in the workshop. • Discuss Standard Operating Procedures (SOPs) of the organisation/dealership for tools/equipment inspection and operation within suggested tolerance levels. • Explain how to maintain different tools and equipment including hand and power tools, specialist tool, etc. as per SOPs of manufacturer/dealership. • Discuss the various methods of gauging and fault assessment in tools and equipment. • Explain operating process and usage of tools/equipment at required place. • Describe the process and workshop protocols followed for schedule maintenance or ordering of any tools and equipment.	• Create a list of available tools and equipment in the workshop as recommended by OEM. • Carry out tools and equipment inspection to check for any losses, defects, wear or breakage. • Prepare timelines document required for calibration of tools/equipment. • Manage required re-calibration of the tools/equipment in workshop or by external vendor within specified timelines and service schedules as per the manufacturer guidelines. • Implement ways to maintain budget within given limit along with records of tools/equipment expenses. • Demonstrate how to label special purpose tool/equipment location with details such as number, application and their total items/child parts, etc. • Supervise placement/storage of clean tools/equipment safely at specified location, mark and report out of order tools/equipment to the concerned person. • Manage issuance of correct special purpose tools/equipment based on vehicle model/aggregate and nature of the job. • Demonstrate how to maintain special purpose tools/equipment usage documentation on daily basis and report in case of any discrepancy.
Classroom Aids:	
White board/ black board marker / chalk, duster, computer or Laptop attached to LCD projector	
Tools, Equipment and Other Requirements	
Reports, job cards, documents used in the dealership/workshop, hand tools, power tools, special service tools, measuring devices and workshop equipment.	

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	7	Two/Four Wheeler service	1	Two/Four wheeler service	NA
ITI	Mechanic Motor Vehicle/Mechanic Auto Electrical and Electronics/Diesel Mechanic	8	Two/Four Wheeler Service	0	Two/Four Wheeler service	NA
BE/ B. Tech	Automobile Engineering/ Mechanical Engineering	5	Two/Four Wheeler Service	1	Two/Four Wheeler Service	NA
Diploma	Automobile Engineering/ Mechanical Engineering	6	Two/Four Wheeler Service	1	Two/Four Wheeler Service	NA
Diploma	Automobile Engineering/ Mechanical Engineering	7	Two/Four Wheeler Service	0	Two/Four Wheeler Service	NA

Trainer Certification	
Domain Certification	**Platform Certification**
Certified for Job Role: "Four Wheeler Service Master Technician Level 6" "ASC/Q1401, v1.0", Minimum accepted score is 80%	Recommended that the Trainer is certified for the Job Role: "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	8	Two/Four Wheeler service	1	Two/Four wheeler service	NA
ITI	Mechanic Motor Vehicle/Mechanic Auto Electrical and Electronics/Diesel Mechanic	9	Two/Four Wheeler Service	0	Two/Four Wheeler service	NA
BE/ B. Tech	Automobile Engineering/ Mechanical Engineering	6	Two/Four Wheeler Service	1	Two/Four Wheeler Service	NA
Diploma	Automobile Engineering/ Mechanical Engineering	7	Two/Four Wheeler Service	1	Two/Four Wheeler Service	NA
Diploma	Automobile Engineering/ Mechanical Engineering	8	Two/Four Wheeler Service	0	Two/Four Wheeler Service	NA

Assessor Certification	
Domain Certification	**Platform Certification**
Certified for Job Role: "Four Wheeler Service Master Technician Level 6" "ASC/Q1401, v1.0", Minimum accepted score is 80%	Recommended that the Assessor is certified for the Job Role: "Assessor" "MEP/Q2701, v1.0"

Assessment Strategy

1. Assessment System Overview:

- Batches assigned to the assessment agencies for conducting the assessment on 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 – The assessor should:

- 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 are created by the Subject Matter Experts (SME)
- Question papers created by the SME are 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
PwD	Persons with Disability
OEM	Original Equipment Manufacturer