Fundamentals of Automobile Technology

MCr Code: ASC/MCr-0003

Version: 1.0

NSQF Level: 2

Automotive Skills Development Council | E-113, Okhla Industrial Area, Phase – III, New Delhi – 110020

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Training Parameters

Sector	Automotive
Sub-Sector	Manufacturing
Occupation	Product Development
Country	India
NSQF Level	2
Minimum Educational Qualification and Experience	Pursuing 6th Class
Pre-Requisite License or Training	No Minimum age restriction for school education perusing learners. No pervious certification required.
Minimum Job Entry Age	18 Years
Last Reviewed On	18/02/2025
Next Review Date	18/02/2028
NSQC Approval Date	18/02/2025
Model Curriculum Creation Date	18/02/2025
Model Curriculum Valid Up to Date	18/02/2028
Minimum Duration of the Course	15 Hours
Maximum Duration of the Course	15 Hours

Program Overview

This section summarizes the end objectives of the program along with its duration.

Training Outcomes

At the end of the program, the learner should have acquired the listed knowledge and skills to:

- Recall history of an automobile.
- Classify different categories of an automobile
- List various parts and systems of a vehicle.
- Explain working and functionality of part and system of a vehicle.
- List current technological changes and upgradations in systems of vehicle.
- Explain need and functionality each changed and upgraded system.

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	Total Duration
Module 1: Introduction of course and automobile industry	01:00	00:00	01:00
Module 2: Basic components and systems of a vehicle	04:00	02:00	06:00
Module 3: Current technological changes in a vehicle	05:00	03:00	08:00
Total Duration	**10:00**	**05:00**	**15:00**

Module Details

Module 1: Introduction of course and automobile industry

Terminal Outcomes:

- Discuss about course and automobile industry.

Duration: 01:00	Duration: 00:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
● Discuss about course structure and its objective. ● Discuss about automobile industry and career opportunities in it. ● Discuss origin and history of automobile ● Classify automobiles ● List different types of automobiles ● Explain Automobile Working Cycle	
Classroom Aids	
Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	

Module 2: Basic components and systems of a vehicle

Terminal Outcomes:

- Understand about basic components and systems of a vehicle.
- Understand about functionality of basic components and systems of a vehicle.

Duration: 04:00	**Duration: 02:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
● Describe basic working of a vehicle ● Describe basic working and functionality of various components and systems of a vehicle ○ Engine - Air Induction, Fuel system, Ignition system, Exhaust system, Lubrication system, cooling system ○ Driveline - Clutch, Gearbox/ Transmission, Transfer case, Differential, Driveshaft, Wheels and Tyres ○ Suspension, Steering ○ Brake System - Drum Brake, Disc Brake and Parking Brake ○ Electrical, Comfort, Convenience systems - Horn, lighting, wiper, instrument cluster, controls, HVAC, seating, power window, central locking, etc. ○ Safety systems - SRS Airbag, ABS etc. ● Describe various terms associated with vehicle working	● Demonstrate the working of a vehicle ● Demonstrate basic working and functionality of various components and systems of a vehicle by showing a video
Classroom Aids	
Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
Demo vehicle and its components	

Module 3: Current technological changes in a vehicle

Terminal Outcomes:

- Understand about current technological changes in a vehicle and its systems.

Duration: 05:00	**Duration: 03:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
● Describe current technological changes in system of a vehicle ○ Engine – CNG and Electric engine ○ Steering system – Manual to Power ○ ECU ○ Common rail injection systems ○ On-Board Diagnostic II ○ Intelligent all-wheel drive ○ Active aerodynamics ○ Autonomous emergency braking ○ Internet connected cars ○ Fuel cells ○ Self-driving cars ○ In-car entertainment ● Describe need of technological changes in a vehicle ● Describe functionality of each new system in the vehicle	● Show current technological changes in system of a vehicle by showing a video. ● Show functionality of each new system in the vehicle by showing a video.
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
Demo vehicle and its components	

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
B.E./B.Tech	Mechanical/ Automobile	3	Automobile industry	1	Automobile industry	NA

Trainer Certification	
Domain Certification	**Platform Certification**
Certified for Job Role: "Fundamentals of Automobile Technology" mapped to QP: "ASC/MCr-0003", v1.0. Minimum accepted score as per SSC guideline is 80%	MEP/Q2601, v2.0 Trainer (VET and Skills). Minimum accepted score as per SSC guideline is 80%

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training/Assessment Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
B.E./B.Tech	Mechanical/ Automobile	4	Automobile industry	1	Automobile industry	NA

Assessor Certification	
Domain Certification	**Platform Certification**
Certified for Job Role: "Fundamentals of Automobile Technology" mapped to QP: "ASC/MCr-0003", v1.0. Minimum accepted score as per SSC guideline is 80%	MEP/Q2701, v2.0 Assessor (VET and Skills). Minimum accepted score as per SSC guideline is 80%.

Assessment Strategy

1. Assessment System Overview:
    - Batches assigned to the assessment agencies for conducting the assessment on SDSM/SIP or email.
    - Assessment agencies send the assessment confirmation to VTP/TC looping SSC.
    - The assessment agency deploys the ToA certified Assessor for executing the assessment.
    - SSC monitors the assessment process & records.
2. Testing Environment:
    - 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.
    - An assessor must be ToA certified & the trainer must be ToT Certified.
    - The assessment agency must follow the assessment guidelines to conduct the assessment.
4. Types of evidence or evidence-gathering protocol:
    - Time-stamped & geotagged reporting of the assessor from assessment location.
    - Center 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:
    - A surprise visit to the assessment location.
    - A 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	A key learning outcome is a 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	The terminal outcome is a statement of what a learner will know, understand and be able to do upon the completion of a module. A set of terminal outcomes help to achieve the training outcome.

Acronyms and Abbreviations

Term	Description
NOS	National Occupational Standard (s)
NSQF	National Skills Qualifications Framework
OJT	On-the-job Training
QP	Qualifications Pack
PwD	People with Disability
PPE	Personal Protective Equipment