

**EXCITING WORLD OF
AUTOMOBILES**



Curriculum
Automobile Service Technician
AUTO-SRV L1-NQ²⁰¹²

**PSS Central Institute of Vocational Education
Bhopal**

PREFACE

Improving the parity of esteem between the general academic education and vocational education, is the policy priority of the Government of India. The National Vocational Education Qualification Framework (NVEQF) developed by the Ministry of Human Resource Development (MHRD), Government of India, is a descriptive framework that provides a common reference for linking various qualifications. It will be used for setting common principles and guidelines for a nationally recognized qualification system covering Schools, Vocational Education and Training Institutions, Technical Education Institutions, Colleges and Universities. The NVEQF will act as a translation device to make qualifications more understandable to employers, students and institutions. It will promote transparency of qualifications and facilitate learner's mobility between different qualifications, thus encouraging lifelong learning. PSSCIVE has taken lead in development of learning material for the Automobile Sector for all level in collaboration with the Automobile Skill Development Corporation (ASDC).

The present material consists of curriculum related to Level L-1 for the Automobile service sector. This will fulfill the needs of the students willing to learn activities relating to the Automobile Service Sector. Any student/ entrepreneur willing to start an Automobile Service Sector can acquire the desired competencies with the help of this book.

The book has been written by experts but reviewed by all the members of the group. I am grateful to the authors for the development of this book and to the members of the Working Group for their candid suggestions, during the development and review. Their names are given elsewhere.

I appreciate efforts put in the by Dr. Saurabh Prakash, as the Project Coordinator of the Working Group in planning and organizing Meetings which led to the final form of this title.

I shall be grateful to receive suggestions and observations from readers, which would help in bringing out a revised and improved version of this book.

Bhopal
June, 2012

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This student workbook was developed, with active involvement of Automobile Skill Development Council (ASDC) keeping in view the National Occupation Standard (NOS) for Service Technician L4 developed by ASDC.

This project for development of the student workbook was coordinated by the PSS Central Institute of Vocational Education, a constituent unit of National Council of Educational Research and Training, which is under Ministry of Human Resource Development, Government of India.

L1-NQ2012

NVEQF Level I - Class IX

Name of Module: Automobile Service Technician

Module Overview:

Student should be able to identify all types of vehicles & their applications, all major systems of a vehicle, introduction to maintenance of vehicles. They will be introduced to various aspects of road safety & environmental issues.

Name and Code of Units

<i>Unit Code</i>	<i>Unit Title</i>	<i>Total Hours</i>
AUTOT-L1-01	History and Evolution of Automobiles	10
AUTO-L1-02	Various types of Automobiles	35
AUTO-L1-03	Major Systems & Components of an Automobile	60
AUTO-L1-04	Road Safety	30
AUTO-L1-05	Automobiles and our Environment	20
AUTO-L1-06	Introduction to Vehicle Maintenance & Servicing	30
AUTO-L1-07	Innovations & Developments in Automobiles	15
	Total	200

List of Elements of unit AUTO-L1-01**History and Evolution of Automobile**

Element Code	History and Evolution of Automobiles	Duration (in Hours)
AUTO-L1-01-E1	Invention of the wheel	2
AUTO-L1-01-E2	Invention of the wheel cart and animal powered horse cart	2
AUTO-L1-01-E3	Invention of Automobile and Evolution	3
AUTO-L1-01-E4	Invention of Automobile and Evolution (Post World War II)	3
	Total duration in hours	10

Details of Elements in unit AUTO-L1-01

UNIT CODE	AUTO-L1-01	
DURATION	10 Hours	
UNIT OVERVIEW	Students will be able to relate the invention of wheel, wheel cart and animal powered horse cart	
ELEMENT AUTO-L1-01-E1	PERFORMANCE CRITERIA	KNOWLEDGE CRITERIA
Describe the Invention of wheel	Able to describe the Invention of wheel	Invention of wheel
ELEMENT AUTO- L1-01-E2	PERFORMANCE CRITERIA	KNOWLEDGE CRITERIA
Invention of wheel cart and animal powered horse cart	Able to describe the wheel cart	Invention of wheel cart and animal powered cart
	Able to explain use of horse power	Use of horse cart and horse power
ELEMENT AUTO-L1-01-E3	PERFORMANCE CRITERIA	KNOWLEDGE CRITERIA
Invention of Automobiles and Evolution till date	Able to describe Invention of Automobiles	Invention of Automobiles and

	and Evolution till date	Evolution till date
ELEMENT AUTO-L1-01-E4	PERFORMANCE CRITERIA	KNOWLEDGE CRITERIA
Invention of automobile (Post world war II)	Able to describe Invention of Automobile and Evolution post World War II	Invention of automobile and Evaluation post World War II

List of Elements of unit AUTO-L1-02

Various types of Automobiles

Element Code	Various types of Automobiles	Duration (in Hours)
AUTO-L1-02-E1	Able to identify Two and Three Wheelers	7
AUTO-L1-02-E2	Able to identify Passenger and Commercial vehicles	7
AUTO-L1-02-E3	Able to identify agricultural vehicles	7
AUTO-L1-02-E4	Able to identify construction equipment vehicles	7
AUTO-L1-02-E5	Able to identify special vehicles	7
	Total duration in hours	35

Detail of Elements in Unit AUTO-L1-02

UNIT CODE	AUTO-L1-02	
DURATION	35 Hours	
UNIT OVERVIEW	Student will be able to identify various types of Automobiles	
ELEMENT AUTO-L1-02-E1	PERFORMANCE CRITERIA	KNOWLEDGE CRITERIA
Able to identify Two Wheelers	Able to identify Two Wheelers used	Two Wheelers, make, model, specifications
	Drawing of Two Wheelers	Parts/Components of Two Wheelers
ELEMENT AUTO-L1-02-E2	PERFORMANCE CRITERIA	KNOWLEDGE CRITERIA
Able to identify Three Wheelers	Able to identify Three Wheelers used.	Three Wheelers, make, model, specifications
	Drawing of Three Wheelers.	Parts/Components of Three Wheelers
ELEMENT AUTO-L1-02-E3	PERFORMANCE CRITERIA	KNOWLEDGE CRITERIA
Able to identify Passenger vehicle	Able to identify Passenger vehicles used.	Passenger vehicle, make, model, specifications
	Drawing of Passenger vehicle.	Parts/Components of Passenger vehicles

ELEMENT AUTO-L1-02-E4	PERFORMANCE CRITERIA	KNOWLEDGE CRITERIA
Able to identify Commercial vehicle	Able to identify Commercial vehicle used.	Commercial vehicle, make, model, specifications
	Drawing of Commercial vehicle,	Parts/Components of Commercial vehicles
ELEMENT AUTO-L1-02-E5	PERFORMANCE CRITERIA	KNOWLEDGE CRITERIA
Able to identify Agricultural vehicle	Able to identify Agricultural vehicle used.	Agricultural vehicle, make, model, specifications

	Drawing of Agricultural vehicle	Parts/Components of Agricultural vehicles
ELEMENT AUTO-L1-02-E6	PERFORMANCE CRITERIA	KNOWLEDGE CRITERIA
Able to identify Construction Equipment Vehicle	Able to identify Construction Equipment Vehicle used.	Construction equipment Vehicles, make, model, specifications
	Drawing of Construction Equipment Vehicles,	Parts/Components of Construction Equipment Vehicles
ELEMENT AUTO-L1-02-E7	PERFORMANCE CRITERIA	KNOWLEDGE CRITERIA
Able to identify Special Vehicles	Able to identify Special Vehicles used.	Special vehicle, make, model, specifications
	Drawing of Special Vehicles,	Parts/Components of Special Vehicles

List of Elements of unit AUTO-L1-03

Major Systems & Components of an Automobile

Sr.No	Elements	Duration (in Hours)
1.	Chassis Frame and Auto Body	5
2.	Engine, and its components	10
3.	Lubrication System	5
4.	Cooling System	2
5.	Fuel Supply	5
6.	Transmission System	5
7.	Front and Rear Axle, ,	2
8.	Steering System	2
9.	Suspension System	5
10.	Wheels and Tyre	2
11.	Brake	5
12.	Electrical & Electronic Systems	5
13.	Air Conditioning System	5
14.	Active and Passive Safety	2
	Total	60

Details of Elements of unit AUTO-L1-03**Major Systems & Components of an Automobile**

UNIT CODE	AUTO-L1-03	
DURATION	60 hours	
UNIT OVERVIEW	Student will be able to Major Systems & Components of an Automobile	
ELEMENT CODE	KNOWLEDGE CRITERIA	PERFORMANCE CRITERIA
ELEMENT AUTO-L1-02-E1	Use of Chassis Frame and Auto Body	Able to identify and describe the importance of Chassis Frame and Auto Body Able to make a drawing of the Chassis Frame and Auto Body
ELEMENT AUTO-L1-02-E2	Use of Engine and its components	Able to identify and describe the importance of the Engine and its components Able to make a drawing of the Engine and its components.
ELEMENT AUTO-L1-02-E3	Use of Lubrication System	Able to identify and describe the importance of the Lubrication and its components Able to make a drawing of the Lubrication system and its components
ELEMENT AUTO-L1-02-E4	Use of Cooling System	Able to identify and describe the importance Cooling System, Able to make a drawing of the Cooling System
ELEMENT AUTO-L1-03-E5	Use of Fuel Supply system	Able to identify and describe importance Fuel Supply System, Able to make a drawing of the Fuel Supply System,
ELEMENT AUTO-L1-03-E6	Use of Transmission System,	Able to identify, describe importance of Transmission System, Able to make a drawing of the Transmission System,
ELEMENT AUTO-L1-03-E7	Use of Front and Rear	Able to identify and describe the importance of Front and Rear Axle, Able to make a drawing of the Front and Rear Axle

ELEMENT AUTO-L1-03-E8	Use of Steering	Able to identify and describe the importance of steering, Able to make drawing of steering
ELEMENT AUTO-L1-03-E9	Use of Suspension System	Able to identify and describe importance of suspension system Able to make a drawing of the Suspension System
ELEMENT AUTO-L1-03-E10	Use of Wheels and Tyres	Able to identify and describe the importance Wheels and Tyres Able to make drawing of Wheels and Tyres
ELEMENT AUTO-L1-03-E6\11	Use of Brake	Able to identify and describe importance of Brake Able to make drawing of Brake
ELEMENT AUTO-L1-03-E12	Use of Electrical & electronic Systems	Able to identify and describe the importance of the Electrical & Electronic Systems Able to make a drawing of the Electrical & Electronic Systems.
ELEMENT AUTO-L1-03-E13	Use of Air Conditioning System	Able to identify and describe the importance of Air Conditioning System Able to make a drawing of Air Conditioning System,
ELEMENT AUTO-L1-03-E14	Use of Active and Passive Safety	Able to identify and describe importance of Active and Passive Safety Able to make a drawing of Active and Passive Safety

List of Element of Unit AUTO-L1-04
Road Safety

Element Code	Road safety	Duration (in Hours)
AUTO-L1-04-E1	Importance of road safety rules	5
AUTO-L1-04-E2	Safe and responsible driving	5
AUTO-L1-04-E3	Road Signs	5
AUTO-L1-04-E4	Driving rules and Registration of a vehicle	5
AUTO-L1-04-E5	Driving License	5
	Total Duration	25

Details of Elements in Unit AUTO-L1-04

UNIT CODE	AUTO-L1-04	
DURATION	25 Hours	
UNIT OVERVIEW	Students will be able to understand about road safety and rules adopted in regulation	
ELEMENT AUTO-L1-04-E1	PERFORMANCE CRITERIA	KNOWLEDGE CRITERIA
Importance of road safety rules	Able to list the safety rules to be followed.	Importance of safety rules and safe practices
	Able to use safe practices while driving.	
ELEMENT AUTO-L1-04-E2	PERFORMANCE CRITERIA	KNOWLEDGE CRITERIA
Safe and responsible driving	Able to list the safe and responsible driving procedures	Safe and responsible driving

ELEMENT AUTO-L1-04-E3	PERFORMANCE CRITERIA	KNOWLEDGE CRITERIA
Road Signs signals	Able to identify various road signs, traffic signals and describe the rules	Road Signs, Traffic signals and rules
	Able to make sketch of various road sign, traffic signals and describe the rules	
ELEMENT AUTO-L1-04-E4	PERFORMANCE CRITERIA	KNOWLEDGE CRITERIA
Driving rules and registration	Able to describe driving rules	Driving rules and registration
	Able to fill forms for driving and registration	
ELEMENT AUTO-L1-04-E5	PERFORMANCE CRITERIA	KNOWLEDGE CRITERIA
Driving License	Able to describe different license forms	License rules
	Able to write license rules	
	Able to fill forms for license	

List of Element of Unit AUTO-L1-05

Element Code	Automobile and Environment	Duration (in hours)
AUTO-L1-05-E1	Air pollution	5
AUTO-L1-05-E2	Auto Emissions and EU/ BS Standards	5
AUTO-L1-05-E3	PUC Certification	10
	Total Duration	20

Detail of Elements in Unit AUTO-L1-05

UNIT CODE	AUTO-L1-05	
DURATION	25 Hours	
UNIT OVERVIEW	Students will be able to understand about Automobiles and Environment	
ELEMENT AUTO-L1-05-E1	PERFORMANCE CRITERIA	KNOWLEDGE CRITERIA
Air pollution	Able to list Air pollution norms	Air Pollution and norms
	Able to observe Air Pollution and Automobiles	Air Pollution and Automobiles
ELEMENT AUTO-L1-05-E2	PERFORMANCE CRITERIA	KNOWLEDGE CRITERIA
Auto emissions and EU/ BS Standards	Able to identify various Standards like EU/ BS, PUC Certification	Auto emissions and EU/ BS Standards
	Able to make list of various standards	
ELEMENT AUTO-L1-05-E1	PERFORMANCE CRITERIA	KNOWLEDGE CRITERIA
PUC Certification	Able to describe about PUC Certification.	PUC Certification

Detail of Elements in Unit AUTO-L1-05

UNIT CODE	AUTO-L1-05	
DURATION	30 Hours	
UNIT OVERVIEW	Student will be able to understand about Automobiles and pollution	
ELEMENT AUTO-L1-05-E1	PERFORMANCE CRITERIA	KNOWLEDGE CRITERIA
Air pollution	Able to list air pollution norms	Air pollution
	Able to observe the Air Pollution and Automobiles.	
ELEMENT AUTO-L1-05-E2	PERFORMANCE CRITERIA	KNOWLEDGE CRITERIA
Auto emissions and EU/ BS Standards	Able to identify various Standards like EU/ BS,	Auto emissions and EU/ BS Standards
	Able to make list of various standards	
ELEMENT AUTO-L1-05-E3	PERFORMANCE CRITERIA	KNOWLEDGE CRITERIA
PUC Certification	Able to describe about PUC Certification.	PUC Certification

Introduction to Vehicle Maintenance and Servicing**Details of Elements of Unit AUTO-L1-06**

Element Code	Name of Element	Duration (in Hours)
AUTO-L1-06-E1	Importance of Vehicle Maintenance and Servicing	10
AUTO-L1-06-E2	Tips to Extend the Life of Vehicles	10
AUTO-L1-05-E3	Introduction to Vehicle Servicing procedure	10
	Total duration	30

Detail of Elements in Unit AUTO-L1-06

UNIT CODE	AUTO-L1-06	
DURATION	30 Hours	
UNIT OVERVIEW	Student will be able to Introduce Vehicle Maintenance and Servicing	
ELEMENT AUTO-L1-06-E1	PERFORMANCE CRITERIA	KNOWLEDGE CRITERIA
Importance of Vehicle Maintenance and Servicing	Able to perform basic procedures for vehicle maintenance	Importance of Vehicle Maintenance and Servicing
	Able to describe vehicle maintenance	
ELEMENT AUTO-L1-06-E2	PERFORMANCE CRITERIA	KNOWLEDGE CRITERIA
Tips to extend the life of vehicles	Able to list tips to extend the life of Vehicles	Tips to extend the life of vehicles
	Able to check the tips	

ELEMENT AUTO-L1-06-E3	PERFORMANCE CRITERIA	KNOWLEDGE CRITERIA
Introduction to Vehicle Servicing procedure	Able to list procedures during vehicle servicing	Procedures during vehicle servicing

List of Elements of Unit AUTO-L1-07

Innovation and Development

Element Code	Innovation and Development	Duration (in hours)
AUTO-L1-07-E1	Innovation and Development	15
	Total Duration	15

Detail of Elements in Unit AUTO-L1-07

UNIT CODE	AUTO-L1-07	
DURATION	15 Hours	
UNIT OVERVIEW	Student will be able to understand about Innovation and Development in Automobiles	
ELEMENT AUTO-L1-07-E1	PERFORMANCE CRITERIA	KNOWLEDGE CRITERIA
Innovation and Development	Able to identify innovation in Automobiles. Able to understand about new developments	Importance of innovation and development