TEACHER'S HANDBOOK

AUTOSERV-NQ2012

Automobile Service Technician-L1

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 Teacher Hand Book 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 Prof. R.B. Shivagunde
Joint Director
Pandit Sunderlal Sharma
Central Institute of Vocational Education

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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.

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About this Handbook

This handbook is to assist teachers with teaching the unit of competency of Auto-Serv-NQ2012: L1

This handbook contains session plans for imparting knowledge and skills on various aspects of the unit of competency. The teacher should refer to the student workbook for the details of the unit of competency, sessions and assessment.

General Instructions for Teachers

- Read the Teacher's Handbook carefully before teaching or conducting the training.
- Follow the session plan strictly. Bring any deviations to the notice of the Head of the Institution.
- Familiarize yourself thoroughly with the relevant knowledge and skills to be transacted.
- Always enter the class at least 10 minutes before the session.
- Ensure all materials/aids/equipment required for teaching and training are available.
- Explain about the materials that are going to be used.
- Introduce the skill by explaining the purpose.
- Demonstrate the skill to the participants, explaining each step in detail.
- Invite the students to ask questions.
- Ask the students to practice the skills themselves and make observation while they perform the task.
- Provide the students with constructive feedback.
- Discuss in the class the problems faced by the students in performing the tasks.
- Summarize the key learnings.
- Ensure key learning are captured and performance standards are met at the end of each session.
- Regularly check student's workbook to ensure all exercises are being completed on time.
- Ensure that all participants complete the required assessments given in the student workbook.
- Maintain a careful record of assessment scores for every participant.
- Always encourage participants. Never discourage them from actively engaging in discussions and question-answer sessions.
- Refer important automobile related websites and show working of a system.

Unit-I- History and Evolution of Automobiles

L1U1-E1- Session 1: Invention of Wheel

- 1. **Duration:** 3 periods
- 2. Materials/ Equipment Required:
 - Demonstration Vehicle
 - Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- 3. Instructions to the Teacher: Collect the desired materials related to Invention of Wheel and commence the session
- 4. Skill building process
 - Discuss about Invention of Wheel
 - Demonstrate a wheel
 - Draw the various components/
- **5. Outcome:** Demonstrate in the class by the students

Unit-I-History and Evolution of Automobiles

L1U1-E1- Session 2: Wheel Cart

- Duration: 3 period
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect desired materials related to Invention of Wheel and commence the session
- Skill building process
 - Discuss about Wheel Cart
 - Demonstrate a wheel
 - Draw the various components of wheel cart
- Outcome: Demonstrate in the class by the students

Unit-I-History and Evolution of Automobiles

L1U1- E1- Session 3: Invention of Automobiles

- Duration: 3 periods
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - · Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect the desired materials related to Invention of Automobiles and commence the session
- Skill building process
 - Discuss about Invention of Automobiles
 - Demonstrate a models of Invention of Automobiles
 - Draw the various components of Automobiles
- Outcome: Demonstrate in the class by the students

Unit-I-History and Evolution of Automobiles

L1U1-E1- Session 4: Invention of Automobiles (Post World War II)

- **Duration:** 3 periods
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect the desired materials related to Invention of Automobiles and commence the session
- Skill building process
 - Discuss about Invention of Automobiles (Post World War II)
 - Demonstrate a models of Invention of Automobiles(Post World War II)
 - Draw the various components of Automobiles
- Outcome: Demonstrate in the class by the students

L1U2-E1-Session 1: Two Wheelers and Three Wheelers

- Duration: 9 periods
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - · Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect the desired materials related to Two Wheelers and Three Wheelers and commence the session
- Skill building process
 - Discuss about Invention of Two Wheelers and Three Wheelers
 - Demonstrate a models of Two Wheelers and Three Wheelers
 - Draw the various components of Two Wheelers and Three Wheelers
- Outcome: Demonstrate in the class by the students

L1U2-E2- Session 2: Passenger and Commercial vehicles

- Duration: 9 periods
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - · Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect the desired materials related to Two Wheelers and Three Wheelers and commence the session
- Skill building process
 - Discuss about Passenger and commercial vehicles
 - Demonstrate a models of Passenger and commercial vehicles
 - Draw the various components of Passenger and commercial vehicles
- Outcome: Demonstrate in the class by the students

L1U2-E2- Session 3 : Agricultural Vehicles

- Duration: 9 periods
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - · Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect the desired materials related to Agricultural Vehicles and commence the session
- Skill building process
 - Discuss about Agricultural Vehicles
 - Demonstrate a models of Agricultural Vehicles
 - Draw the various components of Agricultural Vehicles
- Outcome: Demonstrate in the class by the students

L1U2-E4- Construction Equipment Vehicles

Activity 1

• Duration: 9 periods

• Materials/ Equipment Required:

- Demonstration Vehicle
- · Chairs, Notebook, Pen.
- Picture
- Pamphlet/Poster
- Animation/Video
- Instructions to the Teacher: Collect the desired materials related to Construction Equipment Vehicles and commence the session
- Skill building process
 - Discuss about Construction Equipment Vehicles
 - Demonstrate a models of Construction Equipment Vehicles
 - Draw the various components of Construction Equipment Vehicles
- Outcome: Demonstrate in the class by the students

L1U2-E5-Session 5: Special Vehicles

Activity 1

• Duration: 9 periods

• Materials/ Equipment Required:

- Demonstration Vehicle
- Chairs, Notebook, Pen.
- Picture
- Pamphlet/Poster
- Animation/Video
- Instructions to the Teacher: Collect the desired materials related to Special Vehicles and commence the session
- Skill building process
 - Discuss about Special Vehicles
 - Demonstrate a models of Special Vehicles
 - Draw the various components of Special Vehicles
- Outcome: Demonstrate in the class by the students

L1U3-E1- Session1: Chassis Frame and Auto Body

- **Duration:** 4 periods
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - · Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect the desired materials related to Chassis Frame and Auto Body and commence the session
- Skill building process
 - Discuss about Chassis Frame and Auto Body
 - Demonstrate a models of Chassis Frame and Auto Body
 - Draw the various components of Chassis Frame and Auto Body
- Outcome: Demonstrate in the class by the students

L1U3-E1- Session 2: Engine and its Components

- **Duration:** 4 periods
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - · Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect the desired materials related to Engine and its Components and commence the session
- Skill building process
 - Discuss about Engine and its Components
 - Demonstrate a models of Engine and its Components
 - Draw the various components of Engine and its Components
- Outcome: Demonstrate in the class by the students

L1U3-E1- Session 3: Lubrication System

- **Duration:** 4 periods
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - · Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect the desired materials related to Lubrication System and commence the session
- Skill building process
 - Discuss about Lubrication System
 - Demonstrate a models of Lubrication System
 - Draw the various components of Lubrication System
- Outcome: Demonstrate in the class by the students

L1U3-E1- Session 4: Cooling System

- Duration: 4 periods
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect the desired materials related to Cooling System and commence the session
- Skill building process
 - Discuss about Cooling System
 - Demonstrate a models of Cooling System
 - Draw the various components of Cooling System
- Outcome: Demonstrate in the class by the students

L1U3-E1- Session 5: Fuel Supply System

- Duration: 4 periods
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - · Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect the desired materials related to Fuel Supply System and commence the session
- Skill building process
 - Discuss about Fuel Supply System
 - Demonstrate a models of Fuel Supply System
 - Draw the various components of Fuel Supply System
- Outcome: Demonstrate in the class by the students

L1U3-E1- Session 6: Transmission System

- Duration: 4 periods
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect the desired materials related to Transmission System and commence the session
- Skill building process
 - Discuss about Transmission System
 - Demonstrate a models of Transmission System
 - Draw the various components of Transmission System
- Outcome: Demonstrate in the class by the students

L1U3-E1- Session 7: Front and Rear Axle

- Duration: 4 periods
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect the desired materials related to Front and Rear Axle System and commence the session
- Skill building process
 - Discuss about Front and Rear Axle System
 - Demonstrate a models of Front and Rear Axle System
 - Draw the various components of Front and Rear Axle System
- Outcome: Demonstrate in the class by the students

L1U3-E1- Session 8: Steering System

- Duration: 4 periods
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - · Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect the desired materials related to Steering System and commence the session
- Skill building process
 - Discuss about Steering System
 - Demonstrate a models of Steering System
 - Draw the various components of Steering System
- Outcome: Demonstrate in the class by the students

L1U3-E1- Session 9: Suspension System

- Duration: 4 periods
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect the desired materials related to Suspension System and commence the session
- Skill building process
 - Discuss about Suspension System
 - Demonstrate a models of Suspension System
 - Draw the various components of Suspension System
- Outcome: Demonstrate in the class by the students

L1U3-E1- Session 10: Wheel and Tyre

- Duration: 4 periods
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect the desired materials related to Wheel and Tyre and commence the session
- Skill building process
 - Discuss about Wheel and Tyre System
 - Demonstrate a models of Wheel and Tyre System
 - Draw the various components of Wheel and Tyre System
- Outcome: Demonstrate in the class by the students

L1U3-E1- Session 11: Brake

- **Duration:** 4 periods
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - · Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect the desired materials related to Brake System and commence the session
- Skill building process
 - Discuss about Brake System
 - Demonstrate a models of Brake System
 - Draw the various components of Brake System
- Outcome: Demonstrate in the class by the students

L1U3-E1- Session 12: Electrical and Electronic System

- **Duration:** 4 periods
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - · Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect the desired materials related to Electrical and Electronic System and commence the session
- Skill building process
 - Discuss about Electrical and Electronic System
 - Demonstrate a models of Electrical and Electronic System
 - Draw the various components of Electrical and Electronic System
- Outcome: Demonstrate in the class by the students

L1U3-E1- Session 13: Air Conditioning System

- Duration: 4 periods
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - · Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect the desired materials related to Air Conditioning System and commence the session
- Skill building process
 - Discuss about Air Conditioning System
 - Demonstrate a models of Air Conditioning System
 - Draw the various components of Air Conditioning System
- Outcome: Demonstrate in the class by the students

L1U3-E1- Session 14: Active & Passive safety

- **Duration:** 4 periods
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - · Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect the desired materials related to Transmission System and commence the session
- Skill building process
 - Discuss about Active & Passive safety
 - Demonstrate a models of Active & Passive safety
 - Draw the various components of Active & Passive safety
- Outcome: Demonstrate in the class by the students

L1U4-E1-Session 1: Importance of Road Safety

- **Duration: 5** periods
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect the desired materials related to Importance of Road Safety and commence the session
- Skill building process
 - Discuss about Importance of Road Safety
 - Demonstrate a models of Road Safety
 - Draw the various components of Road Safety
- Outcome: Demonstrate in the class by the students

L1U4-E1- Session 2: Safe and Responsible Driving

- **Duration:** 4 periods
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - · Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect the desired materials related to Safe and Responsible Driving and commence the session
- Skill building process
 - Discuss about Safe and Responsible Driving
 - Demonstrate a models of Safe and Responsible Driving
 - Draw the various components of Safe and Responsible Driving
- Outcome: Demonstrate in the class by the students

L1U4-E1- Session 3: Road Signs

- Duration: 4 periods
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - · Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect the desired materials related to Road Signs and commence the session
- Skill building process
 - Discuss about Road Signs
 - Demonstrate a models of Road Signs
 - Draw the various components of Road Signs
- Outcome: Demonstrate in the class by the students

L1U4-E1- Session 4: Driving rules and Registration

- **Duration:** 4 periods
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - · Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect the desired materials related to Driving rules and Registration and commence the session
- Skill building process
 - Discuss about Driving rules and Registration
 - Demonstrate a models of Driving rules and Registration
 - Draw the various components of Driving rules and Registration
- Outcome: Demonstrate in the class by the students

L1U4-E1- Session 5: Driving License

- Duration: 4 periods
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - · Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect the desired materials related to Driving rules and Registration and commence the session
- Skill building process
 - Discuss about Driving License
 - Demonstrate a models of Driving License
 - Draw the various components of Driving License
- Outcome: Demonstrate in the class by the students

Unit V- Automobile and Environment

L1U5-E1- Session 1: Air Pollution

- Duration: 4 periods
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - · Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect the desired materials related to air pollution and commence the session
- Skill building process
 - Discuss about air pollution
 - Demonstrate a models of air pollution
 - Draw the various components of air pollution
- Outcome: Demonstrate in the class by the students

Unit V- Automobile and Environment

L1U5-E1-Session 2: Auto Emissions and EU/ BS Standards

- Duration: 4 periods
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - · Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect the desired materials related to Auto Emissions and EU/ BS Standards and commence the session
- Skill building process
 - Discuss about Auto Emissions and EU/ BS Standards
 - Demonstrate a models of Auto Emissions and EU/ BS Standards
 - Draw the various components of Auto Emissions and EU/ BS Standards
- Outcome: Demonstrate in the class by the students

Unit V- Automobile and Environment

L1U5-E1-Session 3: PUC Certification

- Duration: 4 periods
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - · Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect the desired materials related to PUC Certification and commence the session
- Skill building process
 - Discuss about PUC Certification
 - Demonstrate a models of PUC Certification
 - Draw the various components of PUC Certification
- Outcome: Demonstrate in the class by the students

Unit VI- Introduction to Vehicle Maintenance & Servicing

L1U6-E1- Session1: Importance to Vehicle Maintenance & Servicing

- Duration: 4 periods
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - · Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect the desired materials related to Importance to Vehicle Maintenance & Servicing and commence the session
- Skill building process
 - Discuss about Importance to Vehicle Maintenance & Servicing and commence the session
 - Demonstrate a models of Importance to Vehicle Maintenance
 & Servicing and commence the session
 - Draw the various components of Importance to Vehicle Maintenance & Servicing and commence the session
- Outcome: Demonstrate in the class by the students

Unit VI- Introduction to Vehicle Maintenance & Servicing

L1U6-E1- Session 2: Tips to Extend the Life of Vehicle

- **Duration:** 4 periods
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - · Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect the desired materials related to Tips to Extend the Life of Vehicle and commence the session
- Skill building process
 - Discuss about Tips to Extend the Life of Vehicle
 - Demonstrate a models of Tips to Extend the Life of Vehicle
 - Draw the various components of Tips to Extend the Life of Vehicle
- Outcome: Demonstrate in the class by the students

Unit VI- Introduction to Vehicle Maintenance & Servicing

L1U6-E1-Sesion 3: Introduction to vehicle service procedure

- **Duration:** 4 periods
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - · Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect the desired materials related to Introduction to vehicle service procedure and commence the session
- Skill building process
 - Discuss about Introduction to vehicle service procedure
 - Demonstrate a procedure to vehicle service procedure
- Draw the various components of vehicle service procedure
- Outcome: Demonstrate in the class by the students

Unit VII- Innovation and Developments

L1U7-E1- Session 1: Innovation and Developments

- **Duration:** 4 periods
- Materials/ Equipment Required:
 - Demonstration Vehicle
 - · Chairs, Notebook, Pen.
 - Picture
 - Pamphlet/Poster
 - Animation/Video
- Instructions to the Teacher: Collect the desired materials related to Innovation and Developments and commence the session
- Skill building process
 - Discuss about Innovation and Developments
 - Demonstrate a models of Innovation and Developments
 - Draw the various components of Innovation and Developments
- Outcome: Demonstrate in the class by the students