

# TRAINING REGULATIONS



## **AUTOMOTIVE BODY REPAIRING NC II**

**AUTOMOTIVE AND  
LAND TRANSPORT SECTOR**

**TECHNICAL EDUCATION AND SKILLS DEVELOPMENT AUTHORITY**  
East Service Road, South Superhighway, Taguig City, Metro Manila

**TABLE OF CONTENTS**  
**AUTOMOTIVE/LAND TRANSPORT SECTOR**  
**AUTOMOTIVE BODY REPAIRING NC II**

	Page No.
<b>SECTION 1 AUTOMOTIVE BODY REPAIRING NC II QUALIFICATION</b>	<b>1</b>
<b>SECTION 2 COMPETENCY STANDARDS</b>	<b>2 –42</b>
• <b>Basic Competencies</b>	2 – 15
• <b>Common Competencies</b>	16 – 33
• <b>Core Competencies</b>	34 – 42
- <b>AUTOMOTIVE BODY REPAIRING NC II</b>	
<b>SECTION 3 TRAINING STANDARDS</b>	<b>43 – 48</b>
<b>3.1 Curriculum Design</b>	43 - 45
<b>3.2 Training Delivery</b>	46
<b>3.3 Trainee Entry Requirements</b>	47
<b>3.4 List of Tools, Equipment and Materials</b>	47
<b>3.5 Training Facilities</b>	48
<b>3.6 Trainers' Qualifications</b>	48
<b>3.7 Institutional Assessment</b>	48
<b>SECTION 4 NATIONAL ASSESSMENT AND CERTIFICATION ARRANGEMENTS</b>	<b>49</b>
<b>COMPETENCY MAP</b>	<b>50</b>
<b>DEFINITION OF TERMS</b>	<b>51 – 52</b>
<b>ACKNOWLEDGEMENTS</b>	<b>53</b>

## TRAINING REGULATIONS FOR AUTOMOTIVE BODY REPAIRING NC II

### SECTION 1 AUTOMOTIVE BODY REPAIRING NC II QUALIFICATION

The AUTOMOTIVE BODY REPAIR NC II Qualification consists of competencies that a person must achieve in repairing automotive bodies and panels of light and heavy duty vehicles according to manufacturer's specification manuals using hand and power tools and welding equipment. It includes the competency in planning and preparing job activities prior to repairing body panels ; dismantling automotive accessories, disassembling, cleaning and inspecting of parts to be repaired; performing basic benchwork (such as layout, cutting and filing, drilling, tapping) body panel alignment and applying of anti-corrosion.

This Qualification is packaged from the competency map of the Automotive Industry (Service sector) as shown in Annex A.

The Units of Competency comprising this Qualification include the following:

<b>CODE NO.</b>	<b>BASIC COMPETENCIES</b>
500311105	Participate in Workplace Communication
500311106	Work in Team Environment
500311107	Practice Career Professionalism
500311108	Practice Occupational Health and Safety Procedures

<b>CODE No.</b>	<b>COMMON COMPETENCIES</b>
ALT723201	Apply Appropriate Sealant/Adhesive
ALT723202	Move and Position Vehicle
ALT311202	Perform Mensuration and Calculation
ALT723203	Read, Interpret and Apply Specifications and Manuals
ALT723204	Use and Apply Lubricant/Coolant
ALT723205	Perform Shop Maintenance

<b>CODE No.</b>	<b>CORE COMPETENCIES</b>
ALT721301	Prepare Vehicle Body for Repair
ALT721302	Repair Body Panel
ALT721303	Replace Damaged Parts with Pre-Fabricated Parts

A person who has achieved this Qualification is competent to be:

- Automotive Body Repair Mechanic
- Automotive Body Repairer
- Automotive Panel Beater & Welder

## SECTION 2 COMPETENCY STANDARDS

This section gives the details of the contents of the basic, common and core units of competency required in AUTOMOTIVE BODY REPAIRING NC II.

### BASIC COMPETENCIES

**UNIT OF COMPETENCY :** PARTICIPATE IN WORKPLACE COMMUNICATION

**UNIT CODE :** 500311105

**UNIT DESCRIPTOR :** This unit covers the knowledge, skills and attitudes required to gather, interpret and convey information in response to workplace requirements.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized</i> terms are elaborated in the Range of Variables
1. Obtain and convey workplace information	1.1 Specific and relevant information is accessed from <b>appropriate sources</b> 1.2 Effective questioning , active listening and speaking skills are used to gather and convey information 1.3 Appropriate <b>medium</b> is used to transfer information and ideas 1.4 Appropriate non- verbal communication is used 1.5 Appropriate lines of communication with supervisors and colleagues are identified and followed 1.6 Defined workplace procedures for the location and <b>storage</b> of information are used 1.7 Personal interaction is carried out clearly and concisely
2. Participate in workplace meetings and discussions	2.1 Team meetings are attended on time 2.2 Own opinions are clearly expressed and those of others are listened to without interruption 2.3 Meeting inputs are consistent with the meeting purpose and established <b>protocols</b> 2.4 <b>Workplace interactions</b> are conducted in a courteous manner 2.5 Questions about simple routine workplace procedures and matters concerning working conditions of employment are asked and responded to 2.6 Meetings outcomes are interpreted and implemented
3. Complete relevant work related documents	3.1 Range of <b>forms</b> relating to conditions of employment are completed accurately and legibly 3.2 Workplace data is recorded on standard workplace forms and documents 3.3 Basic mathematical processes are used for routine calculations 3.4 Errors in recording information on forms/ documents are identified and properly acted upon 3.5 Reporting requirements to supervisor are completed according to organizational guidelines

## RANGE OF VARIABLES

VARIABLE	RANGE
1. Appropriate sources	1.1. Team members 1.2. Suppliers 1.3. Trade personnel 1.4. Local government 1.5. Industry bodies
2. Medium	2.1. Memorandum 2.2. Circular 2.3. Notice 2.4. Information discussion 2.5. Follow-up or verbal instructions 2.6. Face to face communication
3. Storage	3.1. Manual filing system 3.2. Computer-based filing system
4. Forms	4.1. Personnel forms, telephone message forms, safety reports
5. Workplace interactions	5.1. Face to face 5.2. Telephone 5.3. Electronic and two way radio 5.4. Written including electronic, memos, instruction and forms, non-verbal including gestures, signals, signs and diagrams
6. Protocols	6.1. Observing meeting 6.2. Compliance with meeting decisions 6.3. Obeying meeting instructions

## EVIDENCE GUIDE

<p>1. Critical Aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1. Prepared written communication following standard format of the organization</li> <li>1.2. Accessed information using communication equipment</li> <li>1.3. Made use of relevant terms as an aid to transfer information effectively</li> <li>1.4. Conveyed information effectively adopting the formal or informal communication</li> </ul>
<p>2. Underpinning Knowledge and Attitudes</p>	<ul style="list-style-type: none"> <li>2.1. Effective communication</li> <li>2.2. Different modes of communication</li> <li>2.3. Written communication</li> <li>2.4. Organizational policies</li> <li>2.5. Communication procedures and systems</li> <li>2.6. Technology relevant to the enterprise and the individual's work responsibilities</li> </ul>
<p>3. Underpinning Skills</p>	<ul style="list-style-type: none"> <li>3.1. Follow simple spoken language</li> <li>3.2. Perform routine workplace duties following simple written notices</li> <li>3.3. Participate in workplace meetings and discussions</li> <li>3.4. Complete work related documents</li> <li>3.5. Estimate, calculate and record routine workplace measures</li> <li>3.6. Basic mathematical processes of addition, subtraction, division and multiplication</li> <li>3.7. Ability to relate to people of social range in the workplace</li> <li>3.8. Gather and provide information in response to workplace Requirements</li> </ul>
<p>4. Resource Implications</p>	<ul style="list-style-type: none"> <li>4.1. Fax machine</li> <li>4.2. Telephone</li> <li>4.3. Writing materials</li> <li>4.4. Internet</li> </ul>
<p>5. Methods of Assessment</p>	<ul style="list-style-type: none"> <li>5.1. Direct Observation</li> <li>5.2. Oral interview and written test</li> </ul>
<p>6. Context for Assessment</p>	<ul style="list-style-type: none"> <li>6.1. Competency may be assessed individually in the actual workplace or through accredited institution</li> </ul>

**UNIT OF COMPETENCY: WORK IN TEAM ENVIRONMENT**

**UNIT CODE : 500311106**

**UNIT DESCRIPTOR :** This unit covers the skills, knowledge and attitudes to identify role and responsibility as a member of a team.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized</i> terms are elaborated in the Range of Variables
1. Describe team role and scope	1.1. The <b>role and objective of the team</b> is identified from available <b>sources of information</b> 1.2. Team parameters, reporting relationships and responsibilities are identified from team discussions and appropriate external sources
2. Identify own role and responsibility within team	2.1. Individual role and responsibilities within the team environment are identified 2.2. Roles and responsibility of other team members are identified and recognized 2.3. Reporting relationships within team and external to team are identified
3. Work as a team member	3.1. Effective and appropriate forms of communications used and interactions undertaken with team members who contribute to known team activities and objectives 3.2. Effective and appropriate contributions made to complement team activities and objectives, based on individual skills and competencies and <b>workplace context</b> 3.3. Observed protocols in reporting using standard operating procedures 3.4. Contribute to the development of team work plans based on an understanding of team's role and objectives and individual competencies of the members.

## RANGE OF VARIABLES

VARIABLE	RANGE
1. Role and objective of team	1.1. Work activities in a team environment with enterprise or specific sector 1.2. Limited discretion, initiative and judgement maybe demonstrated on the job, either individually or in a team environment
2. Sources of information	2.1. Standard operating and/or other workplace procedures 2.2. Job procedures 2.3. Machine/equipment manufacturer's specifications and instructions 2.4. Organizational or external personnel 2.5. Client/supplier instructions 2.6. Quality standards 2.7. OHS and environmental standards
3. Workplace context	3.1. Work procedures and practices 3.2. Conditions of work environments 3.3. Legislation and industrial agreements 3.4. Standard work practice including the storage, safe handling and disposal of chemicals 3.5. Safety, environmental, housekeeping and quality guidelines



## EVIDENCE GUIDE

<p>1. Critical aspects of competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1. Operated in a team to complete workplace activity</li> <li>1.2. Worked effectively with others</li> <li>1.3. Conveyed information in written or oral form</li> <li>1.4. Selected and used appropriate workplace language</li> <li>1.5. Followed designated work plan for the job</li> <li>1.6. Reported outcomes</li> </ul>
<p>2. Underpinning Knowledge and Attitude</p>	<ul style="list-style-type: none"> <li>2.1. Communication process</li> <li>2.2. Team structure</li> <li>2.3. Team roles</li> <li>2.4. Group planning and decision making</li> </ul>
<p>3. Underpinning Skills</p>	<ul style="list-style-type: none"> <li>3.1. Communicate appropriately, consistent with the culture of the workplace</li> </ul>
<p>4. Resource Implications</p>	<p>The following resources <b>MUST</b> be provided:</p> <ul style="list-style-type: none"> <li>4.1. Access to relevant workplace or appropriately simulated environment where assessment can take place</li> <li>4.2. Materials relevant to the proposed activity or tasks</li> </ul>
<p>5. Methods of Assessment</p>	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> <li>5.1. Observation of the individual member in relation to the work activities of the group</li> <li>5.2. Observation of simulation and or role play involving the participation of individual member to the attainment of organizational goal</li> <li>5.3. Case studies and scenarios as a basis for discussion of issues and strategies in teamwork</li> </ul>
<p>6. Context for Assessment</p>	<ul style="list-style-type: none"> <li>6.1. Competency may be assessed in workplace or in a simulated workplace setting</li> <li>6.2. Assessment shall be observed while task are being undertaken whether individually or in group</li> </ul>

**UNIT OF COMPETENCY: PRACTICE CAREER PROFESSIONALISM**

**UNIT CODE : 500311107**

**UNIT DESCRIPTOR :** This unit covers the knowledge, skills and attitudes in promoting career growth and advancement.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized</i> terms are elaborated in the Range of Variables
1. Integrate personal objectives with organizational goals	1.1 Personal growth and work plans are pursued towards improving the qualifications set for the profession 1.2 Intra- and interpersonal relationships <del>is</del> are maintained in the course of managing oneself based on performance <b>evaluation</b> 1.3 Commitment to the organization and its goal is demonstrated in the performance of duties
1. Set and meet work priorities	2.1 Competing demands are prioritized to achieve personal, team and organizational goals and objectives. 2.2 <b>Resources</b> are utilized efficiently and effectively to manage work priorities and commitments 2.3 Practices along economic use and maintenance of equipment and facilities are followed as per established procedures
2. Maintain professional growth and development	3.1 <b>Trainings and career opportunities</b> are identified and availed of based on job requirements 3.2 <b>Recognitions</b> are -sought/received and demonstrated as proof of career advancement 3.3 <b>Licenses and/or certifications</b> relevant to job and career are obtained and renewed

## RANGE OF VARIABLES

VARIABLE	RANGE
1. Evaluation	1.1 Performance Appraisal 1.2 Psychological Profile 1.3 Aptitude Tests
2. Resources	2.1 Human 2.2 Financial 2.3 Technology 2.3.1 Hardware 2.3.2 Software
3. Trainings and career opportunities	3.1 Participation in training programs 3.1.1 Technical 3.1.2 Supervisory 3.1.3 Managerial 3.1.4 Continuing Education 3.2 Serving as Resource Persons in conferences and workshops
4. Recognitions	4.1 Recommendations 4.2 Citations 4.3 Certificate of Appreciations 4.4 Commendations 4.5 Awards 4.6 Tangible and Intangible Rewards
5. Licenses and/or certifications	5.1 National Certificates 5.2 Certificate of Competency 5.3 Support Level Licenses 5.4 Professional Licenses

## EVIDENCE GUIDE

<p>1. Critical Aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1 Attained job targets within key result areas (KRAs)</li> <li>1.2 Maintained intra - and interpersonal relationship in the course of managing oneself based on performance evaluation</li> <li>1.3 Completed trainings and career opportunities which are based on the requirements of the industries</li> <li>1.4 Acquired and maintained licenses and/or certifications according to the requirement of the qualification</li> </ul>
<p>2. Underpinning Knowledge</p>	<ul style="list-style-type: none"> <li>2.1 Work values and ethics (Code of Conduct, Code of Ethics, etc.)</li> <li>2.2 Company policies</li> <li>2.3 Company-operations, procedures and standards</li> <li>2.4 Fundamental rights at work including gender sensitivity</li> <li>2.5 Personal hygiene practices</li> </ul>
<p>3. Underpinning Skills</p>	<ul style="list-style-type: none"> <li>3.1 Appropriate practice of personal hygiene</li> <li>3.2 Intra and Interpersonal skills</li> <li>3.3 Communication skills</li> </ul>
<p>4. Resource Implications</p>	<p>The following resources <b>MUST</b> be provided:</p> <ul style="list-style-type: none"> <li>4.1 Workplace or assessment location</li> <li>4.2 Case studies/scenarios</li> </ul>
<p>5. Methods of Assessment</p>	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> <li>5.1 Portfolio Assessment</li> <li>5.2 Interview</li> <li>5.3 Simulation/Role-plays</li> <li>5.4 Observation</li> <li>5.5 Third Party Reports</li> <li>5.6 Exams and Tests</li> </ul>
<p>6. Context for Assessment</p>	<ul style="list-style-type: none"> <li>6.1 Competency may be assessed in the work place or in a simulated work place setting</li> </ul>

**UNIT OF COMPETENCY :** PRACTICE OCCUPATIONAL HEALTH AND SAFETY PROCEDURES

**UNIT CODE :** 500311108

**UNIT DESCRIPTOR :** This unit covers the outcomes required to comply with regulatory and organizational requirements for occupational health and safety.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized</i> terms are elaborated in the Range of Variables
1. Identify hazards and risks	1.1 <b>Safety regulations</b> and workplace safety and hazard control practices and procedures are clarified and explained based on organization procedures 1.2 <b>Hazards/risks</b> in the workplace and their corresponding indicators are identified to minimize or eliminate risk to co-workers, workplace and environment in accordance with organization procedures 1.3 <b>Contingency measures</b> during workplace accidents, fire and other emergencies are recognized and established in accordance with organization procedures
2. Evaluate hazards and risks	2.1 Terms of maximum tolerable limits which when exceeded will result in harm or damage are identified based on threshold limit values (TLV) 2.2 Effects of the hazards are determined 2.3 OHS issues and/or concerns and identified safety hazards are reported to designated personnel in accordance with workplace requirements and relevant workplace OHS legislation

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized</i> terms are elaborated in the Range of Variables
3. Control hazards and risks	3.1 Occupational Health and Safety (OHS) procedures for controlling hazards/risks in workplace are consistently followed 3.2 Procedures for dealing with workplace accidents, fire and emergencies are followed in accordance with organization OHS policies 3.3 <b>Personal protective equipment (PPE)</b> is correctly used in accordance with organization OHS procedures and practices 3.4 Appropriate assistance is provided in the event of a workplace emergency in accordance with established organization protocol
4. Maintain OHS awareness	4.1 <b>Emergency-related drills and trainings</b> are participated in as per established organization guidelines and procedures 4.2 <b>OHS personal records</b> are completed and updated in accordance with workplace requirements

## RANGE OF VARIABLES

VARIABLE	RANGE
1. Safety regulations	May include but are not limited to: 1.1 Clean Air Act 1.2 Building code 1.3 National Electrical and Fire Safety Codes 1.4 Waste management statutes and rules 1.5 Philippine Occupational Safety and Health Standards 1.6 DOLE regulations on safety legal requirements 1.7 ECC regulations
2. Hazards/Risks	May include but are not limited to: 2.1 Physical hazards – impact, illumination, pressure, noise, vibration, temperature, radiation 2.2 Biological hazards- bacteria, viruses, plants, parasites, mites, molds, fungi, insects 2.3 Chemical hazards – dusts, fibers, mists, fumes, smoke, gasses, vapors 2.4 Ergonomics <ul style="list-style-type: none"> <li>• Psychological factors – over exertion/ excessive force, awkward/static positions, fatigue, direct pressure, varying metabolic cycles</li> <li>• Physiological factors – monotony, personal relationship, work out cycle</li> </ul>
3. Contingency measures	May include but are not limited to: 3.1 Evacuation 3.2 Isolation 3.3 Decontamination 3.4 (Calling designed) emergency personnel
4. PPE	May include but are not limited to: 4.1 Mask 4.2 Gloves 4.3 Goggles 4.4 Hair Net/cap/bonnet 4.5 Face mask/shield 4.6 Ear muffs 4.7 Apron/Gown/coverall/jump suit 4.8 Anti-static suits

VARIABLE	RANGE
5. Emergency-related drills and training	5.1 Fire drill 5.2 Earthquake drill 5.3 Basic life support/CPR 5.4 First aid 5.5 Spillage control 5.6 Decontamination of chemical and toxic 5.7 Disaster preparedness/management
6. OHS personal records	6.1 Medical/Health records 6.2 Incident reports 6.3 Accident reports 6.4 OHS-related training completed



## EVIDENCE GUIDE

<p>1. Critical Aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1 Explained clearly established workplace safety and hazard control practices and procedures</li> <li>1.2 Identified hazards/risks in the workplace and its corresponding indicators in accordance with company procedures</li> <li>1.3 Recognized contingency measures during workplace accidents, fire and other emergencies</li> <li>1.4 Identified terms of maximum tolerable limits based on threshold limit value- TLV.</li> <li>1.5 Followed Occupational Health and Safety (OHS) procedures for controlling hazards/risks in workplace</li> <li>1.6 Used Personal Protective Equipment (PPE) in accordance with company OHS procedures and practices</li> <li>1.7 Completed and updated OHS personal records in accordance with workplace requirements</li> </ul>
<p>2. Underpinning Knowledge and Attitude</p>	<ul style="list-style-type: none"> <li>2.1 OHS procedures and practices and regulations</li> <li>2.2 PPE types and uses</li> <li>2.3 Personal hygiene practices</li> <li>2.4 Hazards/risks identification and control</li> <li>2.5 Threshold Limit Value -TLV</li> <li>2.6 OHS indicators</li> <li>2.7 Organization safety and health protocol</li> <li>2.8 Safety consciousness</li> <li>2.9 Health consciousness</li> </ul>
<p>3. Underpinning Skills</p>	<ul style="list-style-type: none"> <li>3.1 Practice of personal hygiene</li> <li>3.2 Hazards/risks identification and control skills</li> <li>3.3 Interpersonal skills</li> <li>3.4 Communication skills</li> </ul>
<p>3. Resource Implications</p>	<p>The following resources must be provided:</p> <ul style="list-style-type: none"> <li>4.1 Workplace or assessment location</li> <li>4.2 OHS personal records</li> <li>4.3 PPE</li> <li>4.4 Health records</li> </ul>
<p>4. Methods of Assessment</p>	<p>Competency must be assessed through:</p> <ul style="list-style-type: none"> <li>5.1 Portfolio Assessment</li> <li>5.2 Interview</li> <li>5.3 Case Study/Situation</li> </ul>
<p>5. Context for Assessment</p>	<p>6.1 Competency may be assessed in the work place or in a simulated work place setting</p>

**COMMON COMPETENCIES  
AUTOMOTIVE**

**UNIT OF COMPETENCY: PERFORM MENSURATION AND CALCULATION**

**UNIT CODE: ALT311202**

**UNIT DESCRIPTOR:** This unit includes identifying caring, handling and use of measuring instruments.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized</i> terms are elaborated in the Range of Variables
1. Select measuring instruments	1.1 Object or component to be measured is identified 1.2 Correct specifications are obtained from relevant source 1.3 Appropriate <b>measuring instrument</b> is selected according to job requirements
2. Carry out measurements and calculation	2.1 Measuring tools are selected in line with job requirements 2.2 Accurate measurements are obtained to job 2.3 <b>Calculation</b> needed to complete work tasks are performed using the four basic process of addition (+), subtraction (-), multiplication (x) and division (/). 2.4 Calculations involving fractions, percentages and mixed numbers are used to complete workplace tasks. 2.5 Numerical computation is self-checked and corrected for accuracy 2.6 Instruments are read to the limit of accuracy of the tool.
3. Maintain measuring instruments	3.1 Measuring instruments must kept free from corrosion 3.2 Measuring instruments not dropped to avoid damage 3.3 Measuring instruments cleaned before and after using.

## RANGE OF VARIABLES

VARIABLE	RANGE
1. Measuring instruments	Measuring instruments includes:  1.1 Multitester 1.2 Micrometer (In-out, depth) 1.3 Vernier caliper (Out, inside) 1.4 Dial Gauge with Mag. Std. 1.5 Plastigauge 1.6 Straight Edge 1.7 Thickness gauge 1.8 Torque Gauge 1.9 Small Hole gauge 1.10 Telescopic Gauge 1.11 Try square 1.12 Protractor 1.13 Combination gauge 1.14 Steel rule
2. Calculation	Kinds of Part Mensuration include: 2.1 Volume 2.2 Area 2.3 Displacement 2.4 Inside diameter 2.5 Circumference 2.6 Length 2.7 Thickness 2.8 Outside diameter 2.9 Taper 2.10 Out of roundness 2.11 Oil clearance 2.12 End play/thrust clearance

## EVIDENCE GUIDE

<p>1. Critical aspect of competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1 Selected measuring instruments</li> <li>1.2 Carried-out measurements and calculations.</li> <li>1.3 Maintained measuring instruments</li> </ul>
<p>2. Underpinning knowledge and attitudes</p>	<ul style="list-style-type: none"> <li>2.1 Types of Measuring instruments and its uses</li> <li>2.2 Safe handling procedures in using measuring instruments</li> <li>2.3 Four fundamental operation of mathematics</li> <li>2.2 Formula for Volume, Area, Perimeter and other geometric figures</li> </ul>
<p>3. Underpinning skills</p>	<ul style="list-style-type: none"> <li>3.1 Caring and Handling measuring instruments</li> <li>3.2 Calibrating and using measuring instruments</li> <li>3.1 Performing calculation by Addition, Subtraction, Multiplication and Division</li> <li>3.2 Visualizing objects and shapes</li> <li>3.3 Interpreting formula for volume, area, perimeter and other geometric figures</li> </ul>
<p>4. Resource implication</p>	<p>The following resources must be provided:</p> <ul style="list-style-type: none"> <li>4.1 Workplace location</li> <li>4.2 Measuring instrument appropriate to servicing processes</li> <li>4.3 Instructional materials relevant to the propose activity</li> </ul>
<p>5. Methods of assessment</p>	<p>Competency must be assessed through:</p> <ul style="list-style-type: none"> <li>5.1 Observation with questioning</li> <li>5.2 Written or oral examination</li> <li>5.3 Interview</li> <li>5.4 Demonstration with questioning</li> </ul>
<p>6. Context for assessment</p>	<ul style="list-style-type: none"> <li>6.1 Competency elements must be assessed in a safe working environment</li> <li>6.2 Assessment may be conducted in a workplace or simulated environment</li> </ul>

**UNIT TITLE: READ, INTERPRET AND APPLY SPECIFICATION AND MANUALS.**

**UNIT CODE: ALT723203**

**UNIT DESCRIPTOR:** This unit deals with identifying, interpreting and applying service specification manuals, maintenance procedure manuals and periodic maintenance manual.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized</i> terms are elaborated in the Range of Variables
1. Identify and access manual/ specification	1.1 Appropriate <i>manuals</i> are identified and accessed as per job requirements. 1.2 Version and date of manual is checked to ensure correct specification and procedure are identified.
2. Interpret manuals	2.1 Relevant sections, chapters of manuals/specifications are located in relations to the work to be conducted 2.2 Information and procedure in the manual are interpreted in accordance to industry practices
3. Apply information in manual	3.1 Manual is interpreted according to job requirements 3.2 Work steps are correctly identified in accordance with manufacturer specification 3.3 Manual data is applied according to the given task 3.4 All correct sequencing and adjustments are interpreted in accordance with information contained on the manual or specifications
4. Store manuals	4.1 Manual or specification are stored appropriately to ensure prevention of damage, ready access and updating of information when required in accordance with company requirements

## RANGE OF VARIABLES

VARIABLE	RANGE
1. Manuals	Kinds of manuals: 1.1 Manufacturer's specification manual 1.2 Repair manual 1.3 Maintenance Procedure Manual 1.4 Periodic Maintenance Manual

## EVIDENCE GUIDE

1. Critical aspect of competency	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1 Identified and accessed manual/specification</li> <li>1.2 Interpreted manuals</li> <li>1.3 Applied information in manuals</li> <li>1.4 Stored manuals</li> </ul>
2. Underpinning knowledge and attitudes	<ul style="list-style-type: none"> <li>2.1 Types of manuals used in automotive industry</li> <li>2.2 Identification of symbols used in the manuals</li> <li>3.1 Identification of units of measurements</li> <li>3.2 Unit conversion</li> </ul>
3. Underpinning skills	<ul style="list-style-type: none"> <li>3.1 Reading and comprehension skills required to identify and interpret automotive manuals and specifications</li> <li>3.2 Accessing information and data</li> </ul>
4. Resource Implication	<p>The following resources must be provided:</p> <ul style="list-style-type: none"> <li>4.1 All manuals/catalogues relative to Automotive</li> <li>4.2 Job order, requisitions</li> <li>4.3 Actual vehicle or simulator</li> </ul>
5. Methods of assessment	<p>Competency must be assessed through:</p> <ul style="list-style-type: none"> <li>5.1 Observation with questioning</li> <li>5.2 Interview</li> </ul>
6. Context for assessment	<ul style="list-style-type: none"> <li>6.1 Assessment must be undertaken in accordance with the endorsed TESDA assessment guidelines</li> <li>6.2 Assessment may be conducted in the workplace or a simulated environment.</li> </ul>

**UNIT OF COMPETENCY: MOVE AND POSITION VEHICLE**

**UNIT CODE: ALT723202**

**UNIT DESCRIPTOR:** This competency unit covers the knowledge, skills and attitude needed to move and position vehicle in a workshop.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized</i> terms are elaborated in the Range of Variables
1. Prepare vehicle for driving	1.1 Correct <b>check-up procedures</b> performed based on vehicle manufacturer standard
2. Move and position vehicle	2.1 Select vehicle to be moved or re-position. 2.2 Drive the vehicle to appropriate location 2.3 Park vehicle following <b>parking safety techniques</b> and procedure
3. Check the vehicle	3.1 <b>Vehicle</b> position is checked as per required 3.2 Vehicle is checked for external damages



**RANGE OF VARIABLE**

<b>VARIABLE</b>	<b>RANGE</b>
1. Check up procedure	Check up procedures include the following: 1.1 Oil level 1.2 Brake fluid 1.3 Clutch fluid 1.4 Coolant level 1.5 Battery (electrolyte) 1.6 Tire pressure 1.7 Position of driving gear 1.8 Lighting and warning devices
2. Vehicles	2.1 Vehicles with automatic transmission 2.2 Vehicles with manual transmission
3. Parking safety techniques	3.1 Engaging of Park brake 3.2 Vehicle parking position 3.3 Front wheel position

## EVIDENCE GUIDE

1. Critical aspect of competency	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1 Prepared vehicle for driving.</li> <li>1.2 Moved and positioned vehicle</li> <li>1.3 Checked the vehicle.</li> </ul>
2. Underpinning knowledge and attitudes	<ul style="list-style-type: none"> <li>2.1 Driver's Code of conduct</li> <li>2.2 Workshop signs and symbols</li> <li>2.3 Driving skills</li> <li>2.4 Vehicle accessories for safe driving and parking</li> </ul>
3. Underpinning skills	<ul style="list-style-type: none"> <li>3.1 Ability to handle vehicle/maneuver vehicle the easiest way</li> <li>3.2 Immediate response to accident</li> <li>3.3 Preparing vehicle for driving</li> <li>3.4 Parking Downhill, Uphill, Parallel</li> <li>3.5 Shifting Gears</li> <li>3.6 Maneuvering</li> </ul>
4. Resource implication	<p>The following resources must be provided:</p> <ul style="list-style-type: none"> <li>4.1 Driving range/area</li> <li>4.2 Appropriate vehicle for driving</li> <li>4.3 Vehicle accessories</li> </ul>
5. Method of assessment	<p>Competency must be assessed through:</p> <ul style="list-style-type: none"> <li>5.1 Observation with questioning</li> <li>5.2 Written or oral examination</li> </ul>
6. Context for assessment	<ul style="list-style-type: none"> <li>6.1 Assessment must be undertaken in accordance with the endorsed TESDA assessment guidelines</li> <li>1.1 Assessment of practical skills must be done in a workplace or simulated environment.</li> </ul>

**UNIT OF COMPETENCY: APPLY APPROPRIATE SEALANT/ADHESIVE**

**UNIT CODE: ALT723201**

**UNIT DESCRIPTOR:** This competency unit covers the selection and application of sealant/adhesives.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized</i> terms are elaborated in the Range of Variables
1. Identify appropriate Sealant/adhesive	1.1 <b>Sealant/adhesive</b> selected in line with job requirements and manufacturer's specification 1.2 <b>Sealant/adhesive checking</b> is performed to ensure that product is fit for use.
2. Prepare surface for Sealant/adhesive	2.1 Surface materials are identified as per construction 2.2 Surface is cleaned and free of moisture, dust and other foreign matters to ensure maximum adhesion or seal.
3. Apply sealant/adhesive evenly	3.1 Sealant/adhesive is applied evenly on the surface in line with manufacturer's specification 3.2 Excess sealant/adhesive is removed by sanding or scrapping 3.3 <b>Tools and equipment</b> used to apply sealant/adhesive are appropriate to job requirements 3.4 <b>Safety</b> are observed and PPE are worn in accordance with industry SOP 3.5 <b>Hazards</b> associated with the use of sealant and adhesives are identified.
4. Store/Dispose of sealant/adhesive	4.1 Sealant/adhesive are stored as per prescribed procedure 4.2 Waste are disposed as per workshop SOP

## RANGE OF VARIABLES

VARIABLE	RANGE
1. Sealant/Adhesive	Sealant/adhesive includes: 1.1 Form in Place Gasket (FIPG) 1.2 Ribbon Sealer 1.3 Hametite 1.4 Silicon Body sealer 1.5 Prestite for Auto and Auto Aircon
2. Tools and equipment	Tools and equipment include: 2.1 Putty knife 2.2 Scraper 2.3 Compressor 2.4 Steel brush 2.5 Paint brush 2.6 Rubber hammer 2.7 Hand tools Personal protective equipment include: 2.8 Gloves 2.9 Apron 2.10 Safety shoes 2.11 Goggles 2.12 Gas mask
3. Safety	Safety includes: 3.1 Ventilation 3.2 Handling of Flammable/Irritating substances 3.3 Use of Personal Protective Equipment
4. Hazards	Hazard includes: 4.1 Fumes 4.2 Skin irritation 4.3 Burns
5. Adhesive/Sealant checking	Adhesive/Sealant checking includes: 5.1 Expiry date 5.2 Free of contamination 6.1 Cap/Covers 6.2 Tightly closed 6.3 Concentration

## EVIDENCE GUIDE

1. Critical aspect of competency	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1 Identified appropriate sealant/adhesives</li> <li>1.2 Prepared surface for sealant/adhesive</li> <li>1.3 Applied sealant/adhesive</li> <li>1.4 Stored unused or dispose of used sealant/adhesive</li> </ul>
2. Underpinning knowledge and attitude	<ul style="list-style-type: none"> <li>2.1 OH &amp; S regulations</li> <li>2.2 Safe handling of sealant/adhesive</li> <li>2.3 Industry code of practice</li> <li>2.3 Procedures in sealant/adhesive application</li> <li>2.4 Procedures in interpreting manuals</li> </ul>
3. Underpinning skills	<ul style="list-style-type: none"> <li>3.1 Handling sealant/adhesive</li> <li>3.2 Applying sealant/adhesive</li> <li>3.3 Sanding the surface</li> <li>3.4 Use of tools, equipment</li> <li>3.5 Mixing of body filler and epoxy base and hardener</li> </ul>
4. Resource implication	<p>The following resources must be provided:</p> <ul style="list-style-type: none"> <li>4.1 Materials relevant to the activity</li> <li>4.2 Appropriate tools and equipment</li> <li>4.3 Real or simulated workplace</li> </ul>
5. Methods of assessment	<p>Competency must be assessed through</p> <ul style="list-style-type: none"> <li>5.1 Observation with questioning</li> <li>5.2 Interview related to: <ul style="list-style-type: none"> <li>• Safe and correct use of tools and equipment</li> <li>• Application of adhesive/sealant</li> </ul> </li> </ul>
7. Context for assessment	<ul style="list-style-type: none"> <li>6.1 Competency elements must be assessed in a safe working environment</li> <li>6.2 Assessment may be done in a workplace or simulated environment</li> </ul>

**UNIT OF COMPETENCY: USE AND APPLY LUBRICANTS/COOLANT**

**UNIT CODE: ALT723204**

**UNIT DESCRIPTOR:** This unit identifies the competencies required to select and apply different types of lubricants.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized</i> terms are elaborated in the Range of Variables
1. Identify types of lubricants/ coolant	1.1 Correct information on <b><i>lubrication schedule</i></b> is accessed and interpreted from appropriate manufacturers specifications <b><i>manuals</i></b> 1.2 Type and quantity of <b><i>lubricants/coolant</i></b> is identified as per job requirements
2. Use and apply lubricants/coolant	2.1 Correct procedure for change of lubricant is identified following manufacturer's specification or manual 2.2 Correct tools and equipment are selected and used in line with job requirements 2.3 Existing lubricants is removed and replaced with specified types and quantity of new materials in line with manufacturer's specification 2.4 Safe procedure and use of <b><i>PPE</i></b> is observed when removing or replacing lubricant 2.5 Used lubricants are disposed in accordance with environmental guidelines 2. 6 Work is checked in line with company SOP.
3. Perform housekeeping activities	3.1 <b><i>Tools, equipment</i></b> and materials are properly stored as per company SOP 3.2 Workplace is free from waste materials

## RANGE OF VARIABLES

VARIABLE	RANGE		
1. Manuals	1.1 Manufacturer's specification manual 1.2 Periodic Maintenance manual 1.3 Service Manual		
2. Lubricants/ Coolant	Kinds of lubricants include: <table border="0" style="width: 100%;"> <tr> <td style="vertical-align: top; width: 50%;">               2.1 Engine oil:               <ul style="list-style-type: none"> <li>• Diesel engine oil</li> <li>• Gasoline engine oil</li> </ul>               2.2 Automatic Transmission Fluid               <ul style="list-style-type: none"> <li>• Destro II</li> <li>• T4</li> </ul>               2.3 Gear oil lubricants:               <ul style="list-style-type: none"> <li>• Oil #90</li> <li>• Oil #140</li> <li>• Oil #30</li> <li>• Oil #40</li> </ul>               2.4 Grease               <ul style="list-style-type: none"> <li>• Special (velocity joint) Molybdenum disulfate)</li> <li>• Ordinary</li> <li>• Multi-purpose oil</li> <li>• Contact point lubricant (grease)</li> </ul> </td> <td style="vertical-align: top; width: 50%;">               2.5 Brake/Clutch System               <ul style="list-style-type: none"> <li>• Brake fluid</li> <li>• DOT3</li> </ul>               2.6 Power Steering Fluid               <ul style="list-style-type: none"> <li>• Hydraulic Fluid</li> </ul>               2.7 Radiator Coolant               <ul style="list-style-type: none"> <li>• Long last coolant</li> </ul>               2.8 A/C Compressor Oil               <ul style="list-style-type: none"> <li>• Pag oil</li> </ul> </td> </tr> </table>	2.1 Engine oil: <ul style="list-style-type: none"> <li>• Diesel engine oil</li> <li>• Gasoline engine oil</li> </ul> 2.2 Automatic Transmission Fluid <ul style="list-style-type: none"> <li>• Destro II</li> <li>• T4</li> </ul> 2.3 Gear oil lubricants: <ul style="list-style-type: none"> <li>• Oil #90</li> <li>• Oil #140</li> <li>• Oil #30</li> <li>• Oil #40</li> </ul> 2.4 Grease <ul style="list-style-type: none"> <li>• Special (velocity joint) Molybdenum disulfate)</li> <li>• Ordinary</li> <li>• Multi-purpose oil</li> <li>• Contact point lubricant (grease)</li> </ul>	2.5 Brake/Clutch System <ul style="list-style-type: none"> <li>• Brake fluid</li> <li>• DOT3</li> </ul> 2.6 Power Steering Fluid <ul style="list-style-type: none"> <li>• Hydraulic Fluid</li> </ul> 2.7 Radiator Coolant <ul style="list-style-type: none"> <li>• Long last coolant</li> </ul> 2.8 A/C Compressor Oil <ul style="list-style-type: none"> <li>• Pag oil</li> </ul>
2.1 Engine oil: <ul style="list-style-type: none"> <li>• Diesel engine oil</li> <li>• Gasoline engine oil</li> </ul> 2.2 Automatic Transmission Fluid <ul style="list-style-type: none"> <li>• Destro II</li> <li>• T4</li> </ul> 2.3 Gear oil lubricants: <ul style="list-style-type: none"> <li>• Oil #90</li> <li>• Oil #140</li> <li>• Oil #30</li> <li>• Oil #40</li> </ul> 2.4 Grease <ul style="list-style-type: none"> <li>• Special (velocity joint) Molybdenum disulfate)</li> <li>• Ordinary</li> <li>• Multi-purpose oil</li> <li>• Contact point lubricant (grease)</li> </ul>	2.5 Brake/Clutch System <ul style="list-style-type: none"> <li>• Brake fluid</li> <li>• DOT3</li> </ul> 2.6 Power Steering Fluid <ul style="list-style-type: none"> <li>• Hydraulic Fluid</li> </ul> 2.7 Radiator Coolant <ul style="list-style-type: none"> <li>• Long last coolant</li> </ul> 2.8 A/C Compressor Oil <ul style="list-style-type: none"> <li>• Pag oil</li> </ul>		
3. Lubricant Schedule	Schedule for changing oil: <ul style="list-style-type: none"> <li>3.1 Kilometers traveled used</li> <li>3.2 No. of Hours used</li> <li>3.3 Monthly</li> </ul>		
4. Tool and equipment	Tools used includes: <ul style="list-style-type: none"> <li>4.2 Hand tools</li> <li>4.3 Oiler</li> <li>4.4 Oil Dispenser</li> <li>4.5 Grease gun</li> </ul>		
5. Personal Protective Equipment (PPE)	PPE include: <ul style="list-style-type: none"> <li>5.1 Apron</li> <li>5.2 Gloves</li> <li>5.3 Goggles</li> <li>5.4 Safety shoes</li> </ul>		

## EVIDENCE GUIDE

1. Critical aspect of competency	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1 Identified types of lubricants and lubrication schedule.</li> <li>1.2 Used and applied lubricants.</li> <li>1.3 Performed housekeeping</li> </ul>
2. Underpinning knowledge and attitudes	<ul style="list-style-type: none"> <li>2.1 Types/Classification of Lubricants</li> <li>2.2 Identifying lubrication schedule</li> <li>2.3 Cause and Effects of Gear Oil Dilution</li> <li>2.4 Purpose of Lubrication (Problem and effects)</li> <li>2.5 Hazard associated with lubrication</li> </ul>
3. Underpinning skills	<ul style="list-style-type: none"> <li>3.1 Handling of oils (Gear, oil, engine oil)</li> <li>3.2 Familiarization/Classification of Lubricants</li> <li>3.3 Lubrication Procedure</li> </ul>
4. Resource implication	<p>The following resources must be provided:</p> <ul style="list-style-type: none"> <li>4.1 Workplace: Real or simulated work area</li> <li>4.2 Appropriate tools and equipment</li> <li>4.3 Materials relevant to activity</li> </ul>
5. Methods of assessment	<p>Competency must be assessed through</p> <ul style="list-style-type: none"> <li>5.1 Demonstration with questioning</li> <li>5.2 Written/Oral examination</li> </ul> <p>The assessment of practical skill must only take place a period of supervised practice and repetitive experience.</p>
6. Context for assessment	<ul style="list-style-type: none"> <li>6.1 Competency elements must be assessed in a safe working environment</li> <li>6.2 Assessment must be undertaken in accordance with the endorsed industry assessment guidelines</li> <li>6.3 Assessment of underpinning knowledge and skills may be assessed on or off the job</li> </ul>



## UNIT OF COMPETENCY: PERFORM SHOP MAINTENANCE

UNIT CODE: ALT723307

**UNIT DESCRIPTOR:** This unit deals with inspecting and cleaning of work area including tools, equipment and facilities. Storage and checking of tools/ equipment and disposal of used materials are also incorporated in this competency

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized</i> terms are elaborated in the Range of Variables
1. Inspect/clean tools and work area	1.1 Cleaning solvent used as per workshop/tools <b><i>cleaning requirement</i></b> 1.2 <b><i>Work area</i></b> is checked and cleaned 1.3 Wet surface/spot in work area is wiped and dried
2. Store/arrange tools and shop equipment	2.1 Tools/equipment are checked and stored in their respective shelves/location 2.2 Corresponding labels are posted and visible 2.3 Tools are safely secured and logged in the records
3. Dispose wastes/used lubricants	3.1 Containers for used lubricants are visibly labeled 3.2 Wastes/used lubricants are disposed as per workshop SOP
4. Report damaged tools/equipment	4.1 Complete inventory of tools/equipment is maintained 4.2 Damaged tools/equipment/facilities are identified and repair recommendation is given 4.3 Reports prepared has no error/discrepancy

## RANGE OF VARIABLES

VARIABLE	RANGE
1. Work Area	Work areas include: 1.1 Workshop areas for servicing/repairing light and/or heavy vehicle and/or plant transmissions and/or outdoor power equipment 1.2 Open workshop/garage and enclosed, ventilated office area 1.3 Other variables may include workshop with: <ul style="list-style-type: none"> <li>• Mess hall</li> <li>• Wash room</li> <li>• Comfort room</li> </ul>
2. Cleaning requirement	2.1 Cleaning solvent 2.2 Inventory of supplies, tools, equipment, facilities 2.3 List of mechanics/technicians 2.4 Rags 2.5 Broom 2.6 Map 2.7 Pail 2.8 Used oil container 2.9 Oiler 2.10 Dust/waste bin
3. Manuals	3.1 Vehicle/plant manufacturer specifications 3.2 Company operating procedures 3.3 Industry/Workplace Codes of Practice 3.4 Product manufacturer specifications 3.5 Customer requirements 3.6 Industry Occupational Health & Safety
4. Company standard operating procedure	Wearing of Personal protective equipment include: <ul style="list-style-type: none"> <li>4.1 Gloves</li> <li>4.2 Apron</li> <li>4.3 Goggles</li> <li>4.4 Safety shoes</li> </ul>

## EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Cleaned workshop tools/facilities 1.2 Maintained equipment, tools and facilities 1.3 Disposed wastes and used lubricants/fluid as per required procedure
2. Underpinning knowledge and attitudes	2.1 5S or TQM 2.2 Service procedures 2.3 Relevant technical information 2.4 Safe handling of Equipment and tools 2.5 Vehicle safety requirements 2.6 Workshop policies 2.7 Personal safety procedures 2.8 Fire Extinguishers and prevention 2.9 Storage/Disposal of Hazardous/flammable materials 2.10 Positive Work Values (Perseverance, Honesty, Patience, Attention to Details)
3. Underpinning skills	3.1 Handling/Storing of tools/equipment/supplies and material 3.2 Cleaning grease/lubricants 3.3 Disposing of wastes and fluid 3.4 Preparing inventory of s/m and tools and equipment 3.5 Monitoring of s/m and tools/equipment
4. Resource implications	The following resources must be provided: 4.1 Workplace: Real or simulated work area 4.2 Appropriate Tools & equipment 4.3 Materials relevant to the activity
5. Method of assessment	Competency must be assessed through: 5.1 Written/Oral Questioning 5.2 Demonstration 5.3 Assessment of underpinning knowledge and practical skills may be combined.
6. Context for assessment	6.1 Competency must be assessed on the job or simulated environment. 6.2 The assessment of practical skills must take place after a period of supervised practice and repetitive experience.

## CORE COMPETENCIES

### UNIT OF COMPETENCY: PREPARE VEHICLE BODY FOR REPAIR

**UNIT CODE: ALT721301**

**UNIT DESCRIPTOR:** This unit deals covers the knowledge, skills and attitudes in preparing the vehicle prior to the actual repair work. It includes the removal of accessories, which are located within the vicinity of the repair work area.

ELEMENT	PERFORMANCE CRITERIA
	<i>Italicized</i> terms are elaborated in the Range of Variables
1. Dismantle and store accessories	1.1 <b>Vehicle body parts</b> dismantled as per repair manual 1.2 Task is performed with no damage to vehicle and equipment and no accident/injury 1.3 Internal/External parts are labeled according to specifications. 1.4 Accessories are stored in accordance with company procedures
2. Disassemble parts to be repaired	2.1 <b>Parts</b> are disassembled as per procedure 2.2 Parts are disassembled with no damage to vehicle and equipment and no accident/injury 2.3 <b>Tools</b> and <b>equipment</b> are used according to repair manual/instruction
3. Clean vehicle panel for repair	3.1 <b>Cleaning materials</b> and <b>consumables</b> are used as per procedure 3.2 Vehicle panels are cleaned with no 3.2.1 Old defective paints 3.2.2 Body filler and sealers thoroughly removed
4. Inspect degree of Repair	4.1 Inspection of damage for repair is performed as per company standard operating procedures. 4.2 Inspection report is accomplished based on degree of repair recommended

## RANGE OF VARIABLES

VARIABLE	RANGE		
1. Vehicle Body Parts	Vehicle body include but not limited to: <table border="0" style="width: 100%;"> <tr> <td style="vertical-align: top; width: 50%;">               1.1. Door                1.2. Hood                1.3. Bumper                1.4. Roof                1.5. Side View Mirror                1.6. Mud Guard                1.7. Door moldings                1.8. Weather strips                1.9. Window mechanism             </td> <td style="vertical-align: top; width: 50%;">               1.10 Sidings and door handle                1.11 Trunk lid, door knob                1.12 Running board, instrument panel                1.13 Floor panel                1.14 Windshield                1.15 Quarter panel                1.16 Fender                1.17 Radiator Panel             </td> </tr> </table>	1.1. Door 1.2. Hood 1.3. Bumper 1.4. Roof 1.5. Side View Mirror 1.6. Mud Guard 1.7. Door moldings 1.8. Weather strips 1.9. Window mechanism	1.10 Sidings and door handle 1.11 Trunk lid, door knob 1.12 Running board, instrument panel 1.13 Floor panel 1.14 Windshield 1.15 Quarter panel 1.16 Fender 1.17 Radiator Panel
1.1. Door 1.2. Hood 1.3. Bumper 1.4. Roof 1.5. Side View Mirror 1.6. Mud Guard 1.7. Door moldings 1.8. Weather strips 1.9. Window mechanism	1.10 Sidings and door handle 1.11 Trunk lid, door knob 1.12 Running board, instrument panel 1.13 Floor panel 1.14 Windshield 1.15 Quarter panel 1.16 Fender 1.17 Radiator Panel		
2 Cleaning and Consumable materials	2.1 Cleaning agents/sprays (de-waxing, detergents, degreasers)Paint remover, Metal conditioner 2.2 Labeling tags 2.3 Plastic wrappers or bags 2.4 Steel brush		
3 Tools and equipment	3.1 Basic Handtools <ul style="list-style-type: none"> <li>• Wrenches(Allen, box, open, socket)</li> <li>• Screwdriver (Philips, standard)</li> <li>• Scraper</li> <li>• Chisel</li> <li>• Hammer set (for Body Repair)</li> <li>• Sliding hammer</li> <li>• Vise grip</li> <li>• Steel rule</li> </ul> 3.2 Special Handtools for disassembling Panels <ul style="list-style-type: none"> <li>• Pry bar</li> <li>• Dollies</li> <li>• Cutter (pneumatic, grinder w/ cutting stone and cutting blade)</li> <li>• Hammer drive wrench</li> </ul> 3.3 Special equipment (pressure washers, steam cleaners, spray equipment), MIG/CO2 Welding machine 3.4 Power tools, jacks, stands, lifting equipment		
4 Company Standard Operating Procedure	4.1 Job Order 4.2 Compliance to Vehicle and Product Manufacturer's Specification 4.3 Use of personal protective equipment and devices such as mask, gloves, safety shoes, goggles, rags 4.4 Insurance company instructions 4.5 Repair quotations 4.6 Material Safety Data Sheet		

## EVIDENCE GUIDE

<p>1. Critical aspects of competency</p>	<p>Competency requires evidence that the candidate</p> <ul style="list-style-type: none"> <li>1.1 Disassembled and stored accessories as per procedure</li> <li>1.2 Carried out safe work practices</li> <li>1.3 Demonstrated proper handling techniques in cleaning</li> <li>1.4 Practiced vehicle protection methods</li> </ul>
<p>2. Underpinning knowledge and attitudes</p>	<ul style="list-style-type: none"> <li>2.1 Parts of an Automotive Vehicle and Accessories</li> <li>2.2 Personal safety requirements</li> <li>2.3 Repair Manual</li> <li>2.4 Equipment safety requirements</li> <li>2.5 Relevant company policies</li> <li>2.6 Perseverance and Thoroughness in Work</li> <li>2.7 Honesty in the Workplace</li> </ul>
<p>3. Underpinning skills</p>	<ul style="list-style-type: none"> <li>3.1 Disassembling Parts and Accessories</li> <li>3.2 Cleaning techniques</li> <li>3.3 Communication skills</li> <li>3.4 Identifying accessories and Labeling/Storing of Parts</li> </ul>
<p>4. Resource implications</p>	<p>The following resources must be provided:</p> <ul style="list-style-type: none"> <li>4.1 Workplace: Real or simulated work area</li> <li>4.2 Appropriate Tools &amp; equipment</li> <li>4.3 Supplies and materials</li> </ul>
<p>5. Method of assessment</p>	<p>Competency must be assessed through:</p> <ul style="list-style-type: none"> <li>5.1 Interview Questions</li> <li>5.2 Actual performance of the competency</li> <li>5.3 Written/Oral exam</li> </ul>
<p>6. Context for assessment</p>	<ul style="list-style-type: none"> <li>6.1 Competency elements must be assessed on the job or simulated environment.</li> <li>6.2 The assessment of practical skills must take place after a period of supervised practice and repetitive experience.</li> </ul>

## UNIT OF COMPETENCY: REPAIR BODY PANEL

UNIT CODE: ALT721302

**UNIT DESCRIPTOR:** This unit covers the knowledge skills and attitudes to repair body panel of vehicle such as flooring, running board, trunk lid, quarter panel, rocker, door panel, fender, or hood. It also includes the preparation of body panel for anti-corrosion primer.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized</i> terms are elaborated in the Range of Variables
1. Prepare panel beating and welding materials and equipment	1.1 Hammer and dolly set is set up as per repair requirements 1.2 <b>Welding materials and equipment</b> set-up as per procedure and as per job order 1.3 Welding supplies and materials are prepared as per job requirements 1.4 <b>Body panel materials</b> are arranged as per job requirements 1.5 Fire extinguisher is set up as required
2. Repair body panels	2.1 Damaged portion is hammered/straightened as per job requirement 2.2 Hammering/beating is performed as per procedures 2.3 Welding of panel is performed as per job requirement and company standard operating procedures. 2.4 Welded panel is aligned and exactly fitted as per quality procedures 2.6 Damaged body panels beyond repair is recommended for replacement based on specifications
3. Inspect frame and body panel alignment	3.1 <b>Frame and body panel misalignment</b> is accurately identified based on specifications 3.2 Panel alignment is performed as per procedure
4 Apply anti-corrosion to body panel	4.1 Damaged part is cleaned with wire brush according to specifications 4.2 Metal conditioner is applied as per manufacturer's specification 4.3 Grinding and sanding process is applied as needed to smoothen rough surfaces

## RANGE OF VARIABLES

VARIABLE	RANGE
1. Welding Equipment/ Materials	Welding equipment/materials includes but not limited to: <ul style="list-style-type: none"> <li>1.1 Oxyacetylene welding accessories</li> <li>1.2 Welding machine (MIG/CO2-MIG) and accessories</li> <li>1.2 Welding electrodes</li> <li>1.3 Filler rod/GI wire/filler wire</li> <li>1.4 Borax</li> <li>1.5 Body aligner</li> <li>1.6 Sander</li> <li>1.7 Grinding Machines</li> <li>1.8 Steel rule</li> <li>1.9 Bender</li> <li>1.5 Personal protective equipment such as               <ul style="list-style-type: none"> <li>• Welding Mask &amp; goggles</li> <li>• Welding gloves, arm protector</li> <li>• Welding apron</li> <li>• Safety shoes, leg protector</li> </ul> </li> </ul>
2. Body Panel Materials and other consumables	Body panel materials includes but not limited to: <ul style="list-style-type: none"> <li>2.1 Galvanized sheet</li> <li>2.2 Lead strips</li> <li>2.3 Pencil</li> <li>2.4 Box board</li> <li>2.5 Scissors</li> <li>2.6 Masking tapes</li> <li>2.7 Soft stone/chalk stone</li> <li>2.8 Chisel</li> <li>2.9 Cutter</li> </ul>
3. Frame/Body Panel Misalignment	Frame/Body Panel misalignment may occur in: <ul style="list-style-type: none"> <li>3.1 Door</li> <li>3.2 Bumper</li> <li>3.3 Trunk lid</li> <li>3.4 Hood</li> <li>3.5 Mud guard</li> <li>3.6 Head light/Tail light</li> <li>3.7 Radiator grille</li> <li>3.8 Fender</li> <li>3.9 Quarter Panel Bumper guard</li> <li>3.10 Clearance light</li> </ul>
4. Grinding and sanding process	Grinding and sanding process may include: <ul style="list-style-type: none"> <li>4.1 Using grinding stone</li> <li>4.2 Using cup brush</li> </ul>



## EVIDENCE GUIDE

<p>1. Critical aspects of competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1 Repaired damaged portion per company SOP</li> <li>1.2 Replaced body panels according to repair instruction and specification</li> <li>1.3 Aligned body parts per manufacturer instruction and specifications</li> <li>1.4 Applied anti-corrosion as per job requirements</li> <li>1.5 Used welding safety kit</li> </ul>
<p>2. Underpinning knowledge and attitude</p>	<ul style="list-style-type: none"> <li>2.1 Types of welding equipment</li> <li>2.2 Types of body panel materials</li> <li>2.3 Types of Body panel tools</li> <li>2.4 Different types of pattern development</li> <li>2.5 Different types of bumping, heating, filling and pattern-making procedures</li> <li>2.6 Tacking and welding procedures</li> <li>2.7 Technical data and information on welding</li> <li>2.8 Perseverance and Thoroughness in Work</li> <li>2.9 Honesty in work</li> </ul>
<p>3. Underpinning skills</p>	<ul style="list-style-type: none"> <li>3.1 Welding</li> <li>3.2 Soldering</li> <li>3.3 Cutting</li> <li>3.4 Tacking</li> <li>3.5 Making Pattern</li> <li>3.6 Grinding and Sanding Procedure</li> <li>3.7 Measuring, layout and marking pattern</li> </ul>
<p>4. Resource implications</p>	<p>The following resources must be provided:</p> <ul style="list-style-type: none"> <li>4.1 Workplace: Real or simulated work area</li> <li>4.2 Appropriate Tools &amp; equipment</li> <li>4.3 Materials relevant to the activity</li> </ul>
<p>5. Method of assessment</p>	<p>Competency must be assessed through:</p> <ul style="list-style-type: none"> <li>5.1 Interview/Questioning</li> <li>5.2 Demonstration or Actual performance of the task</li> <li>5.3 Portfolio</li> <li>5.4 Assessment of underpinning knowledge and practical skills may be combined</li> </ul>
<p>6. Context for assessment</p>	<ul style="list-style-type: none"> <li>6.1 Competency elements must be assessed on the job or simulated environment.</li> <li>6.2 The assessment of practical skills must take place after a period of supervised practice and repetitive experience.</li> </ul>

**UNIT OF COMPETENCY: REPLACE DAMAGED PARTS WITH PRE-FABRICATED PANEL**

**UNIT CODE: ALT721303**

**UNIT DESCRIPTOR:** This unit covers the knowledge, skills and attitudes to replace damaged parts with pre-fabricated panels of vehicle body. Damaged parts are those that are beyond repair by hammering or beating. It also include competencies in performing basic benchwork (i.e. layout; cutting with hacksaw and chisel; filing; drilling; tapping) and checking the components for conformance to specifications.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized</i> terms are elaborated in the Range of Variables
1. Prepare pattern	1.1 Prepared patter is measured with no error 1.2 Pattern is developed following recommended procedure
2. Layout and mark dimensions/features on workpiece	2.1 <b>Pre-fabricated panel materials</b> are selected according to the job requirements . 2.2 Dimensions/features are laid out and marked in accordance with <b>Manual specifications</b> using benchwork <b>tools, equipment</b> and appropriate materials. 2.3. Benchwork operations are performed following company standard operating procedure
3. Cut, chip and file flat workpiece	3.1 Workpieces are clamped with no damage and accidents. 3.2 Workpieces are cut, chipped or filed based on tolerance specified in the Manual. 3.3 Broken or dull hacksaw blades are replaced according to job requirements 3.4 Benchwork operations are performed as per safety procedures.
4 Drill, ream and lap holes	4.1 Hole are drilled as per Manual specification 4.2 Holes are reamed with a tolerance of 0.025 to 0.127mm (0.001" to 0.005") specified dimension or job specification 4.3 Holes are lapped within tolerance of $\pm 0.025$ mm (0.001") of job specification. 4.4 Drilling, reaming or lapping holes are performed according to recommended sequence. 4.5 Benchwork operations are performed as per safety procedures
5. Trial fit pre-fabricated panel	5.1 Sublet material is flattened based on procedures 5.2 Pre-fabricated panel is fitted as per procedures 5.3 Connective action is performed as required.

## RANGE OF VARIABLES

VARIABLE	RANGE	
1. Pre-fabricated panel materials	Metallic Mild steel 1.1 Flat bar 1.2 Square bar 1.3 Angle bar 1.4 Round bar 1.5 G.I. sheet 1.6 B.I sheet 1.7 Beam	Non Metallic 1.8 PVC 1.9 Rubber 1.10 Wood 1.11 Fiber 1.12 Plastic
2. Manual	2.1 Procedures manual 2.2 Instructional manual 2.3 Workshop Manual I on Fiber Glass	
3. Company Standard Operating Procedures	3.1 Job order 3.2 Requisition slip 3.3 Wearing of Personal Protective devices such as: <ul style="list-style-type: none"> <li>• Goggles</li> <li>• Hand gloves</li> <li>• Apron</li> <li>• Safety shoes</li> <li>• Lens (clear and dark)</li> </ul> 3.4 Safety Procedures 3.5 Fire Extinguisher	
4. Tools	4.1 Cutting tools 4.2 Drilling tools 4.3 Tapping tools 4.4 Riveter 4.5 Measuring tools	4.6 Molding tools 4.7 Cutting tools 4.8 Pattern making tools 4.9 Removing tools 4.10 Tinsmith Handtools
5. Consumables	5.1 Rivets 5.2 G.I. wire 5.3 Bolts and nut 5.4 Fasteners 5.5 Welding electrodes 5.6 Wire brush	
6. Equipment	6.1 Welding equipment 6.2 Clean strip 6.3 Grinder 6.4 Electric Puller 6.5 Bending equipment 6.6 Body aligner	

## EVIDENCE GUIDE

1. Critical aspect of competency	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1 Laid-out and marked dimensions/features on Workpiece</li> <li>1.2 Cut, chipped and filed flat, workpiece</li> <li>1.3 Drilled, reamed and lapped holes</li> <li>1.4 Replace Pre-Fabricated Vehicle body Parts as per manual instruction</li> <li>1.5 Had set-up welding equipment</li> <li>1.6 Molded sublet materials</li> </ul>
2. Underpinning knowledge and attitudes	<ul style="list-style-type: none"> <li>2.1 Safe handling of tools</li> <li>2.2 Identification &amp; classification of cutting, drilling, and tapping tools/equipment</li> <li>2.3 Benchwork process and procedures</li> <li>2.4 Mensuration</li> <li>2.5 Types of Sublet materials</li> <li>2.6 Pattern Making</li> <li>2.7 Types of Molding, Cutting, removing tools</li> <li>2.8 Perseverance and Thoroughness in Work</li> <li>2.9 Honesty in the workplace</li> </ul>
3. Underpinning skills	<ul style="list-style-type: none"> <li>3.1 Use of cutting, drilling, tapping and other tools</li> <li>3.2 Proper positioning of body panels/parts</li> </ul>
4. Resource implication	<p>The following resources must be provided:</p> <ul style="list-style-type: none"> <li>4.1 Materials relevant to the activity</li> <li>4.2 Appropriate tools, supplies and materials</li> <li>4.3 Real or simulated workplace</li> </ul>
5. Method of assessment	<p>Competency must be assessed through:</p> <ul style="list-style-type: none"> <li>5.1 Written examination</li> <li>5.2 Interview and questioning</li> <li>5.3 Practical demonstration</li> </ul> <p>Assessment of underpinning knowledge and practical skills may be combined</p>
6. Context for assessment	<ul style="list-style-type: none"> <li>6.1 Competency elements must be assessed in a safe working environment and in accordance with the approved industry OH &amp; S regulations</li> <li>6.2 Assessment of underpinning knowledge and skills may be assessed on or off the job</li> </ul>

### SECTION 3. TRAINING STANDARDS

These guidelines are set to provide the Technical and Vocational Education and Training (TVET) providers with information and other important requirements to consider when designing training programs for **AUTOMOTIVE BODY REPAIRING NC II**.

#### 3.1 CURRICULUM DESIGN

Course Title: **AUTOMOTIVE BODY REPAIRING** NC Level **NC II**

Nominal Training Duration: **18 Hours** (Basic Competencies)  
**20 Hours** (Common Competencies)  
**80 Hours** (Core Competencies)

Course Description:

This qualification is designed to develop knowledge, desirable attitudes and skills of automotive body repairer. It deals on body repair and panels such as light and heavy-duty vehicles according to manufacturer's specifications, using hand and power tools and welding equipment. It covers core competencies such as prepare vehicle for repair, repair body panel, fabricate damaged parts and perform housekeeping which leads to maintain an organized and clean work area.

This qualification is also designed to develop the basic and common knowledge, desirable attitudes and skills of automotive body repairer

To obtain this, all units of competency prescribed for this qualification must be achieved.

#### BASIC COMPETENCIES

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach
1. Participate in workplace communication	1.1 Obtain and convey workplace information. 1.2 Complete relevant work related documents. 1.3 Participate in workplace meeting and discussion.	<ul style="list-style-type: none"><li>• Group discussion</li><li>• Interaction</li></ul>	<ul style="list-style-type: none"><li>• Demonstration</li><li>• Observation</li><li>• Interviews/questioning</li></ul>
2. Work in a team environment	2.1 Describe and identify team role and responsibility in a team. 2.2 Describe work as a team member.	<ul style="list-style-type: none"><li>• Discussion</li><li>• Interaction</li></ul>	<ul style="list-style-type: none"><li>• Demonstration</li><li>• Observation</li><li>• Interviews/questioning</li></ul>

3. Practice career professionalism	3.1 Integrate personal objectives with organizational goals. 3.2 Set and meet work priorities. 3.3 Maintain professional growth and development.	<ul style="list-style-type: none"> <li>• Discussion</li> <li>• Interaction</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstration</li> <li>• Observation</li> <li>• Interviews/questioning</li> </ul>
4. Practice occupational health and safety	4.1 Evaluate hazard and risks 4.2 Control hazards and risks 4.3 Maintain occupational health and safety awareness	<ul style="list-style-type: none"> <li>• Discussion</li> <li>• Plant tour</li> <li>• Symposium</li> </ul>	<ul style="list-style-type: none"> <li>• Observation</li> <li>• Interview</li> </ul>

### COMMON COMPETENCIES

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach
1. Apply Appropriate Sealant/ Adhesive	1.1. Identify appropriate sealant/ adhesive 1.2. Prepare surface for sealant/ adhesive application 1.3. Store unused and dispose used sealant/adhesive	<ul style="list-style-type: none"> <li>• Lecture/ Demonstration</li> <li>• Dual training</li> <li>• Self paced (modular)</li> <li>• Distance Learning</li> </ul>	<ul style="list-style-type: none"> <li>• Written test</li> <li>• Oral questioning</li> <li>• Direct observation</li> <li>• Project method</li> <li>• Interview</li> </ul>
2. Move and Position Vehicle	2.1. Prepare vehicle for driving 2.2. Move and position vehicle 2.3. Check the vehicle	<ul style="list-style-type: none"> <li>• Lecture/ Demonstration</li> <li>• Dual training</li> <li>• Self paced (modular)</li> <li>• Distance Learning</li> </ul>	<ul style="list-style-type: none"> <li>• Written test</li> <li>• Oral questioning</li> <li>• Direct observation</li> <li>• Project method</li> <li>• Interview</li> </ul>
3. Perform Mensuration and Calculation	3.1. Select measuring instrument and carry out measurement and calculations. 3.2. Maintain measuring instruments	<ul style="list-style-type: none"> <li>• Lecture/ Demonstration</li> <li>• Dual training</li> <li>• Self paced (modular)</li> <li>• Distance Learning</li> </ul>	<ul style="list-style-type: none"> <li>• Written test</li> <li>• Oral questioning</li> <li>• Direct observation</li> <li>• Project method</li> <li>• Interview</li> </ul>
4. Read, Interpret and Apply Specifications and Manual	4.1. Identify/accessed manuals and interpret data and specification 4.2. Apply information accessed in manual 4.3. Store manual	<ul style="list-style-type: none"> <li>• Lecture/ Demonstration</li> <li>• Dual training</li> <li>• Self paced (modular)</li> <li>• Distance Learning</li> </ul>	<ul style="list-style-type: none"> <li>• Written test</li> <li>• Oral questioning</li> <li>• Direct observation</li> <li>• Project method</li> <li>• Interview</li> </ul>
5. Use and Apply Lubricant/ Coolant	5.1. Identify type of lubricant/coolant 5.2. Use and apply lubricant	<ul style="list-style-type: none"> <li>• Lecture/ Demonstration</li> <li>• Dual training</li> <li>• Self paced (modular)</li> <li>• Distance Learning</li> </ul>	<ul style="list-style-type: none"> <li>• Written test</li> <li>• Oral questioning</li> <li>• Direct observation</li> <li>• Project method</li> <li>• Interview</li> </ul>

6. Perform Shop Maintenance	6.1 Inspect/clean tools and work area 6.2 Store/arrange tools and shop equipment 6.3 Dispose wastes/used lubricants 6.4 Report damaged tools/equipment	<ul style="list-style-type: none"> <li>• Lecture/ Demonstration</li> <li>• Dual training</li> <li>• Self paced (modular)</li> <li>• Distance Learning</li> </ul>	<ul style="list-style-type: none"> <li>• Written test</li> <li>• Oral questioning</li> <li>• Direct observation</li> <li>• Project method</li> <li>• Interview</li> </ul>
-----------------------------	---	--	---

### CORE COMPETENCIES

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach
1. Prepare Vehicle for Repair	1.1 Dismantle and store accessories 1.2 Dismantle parts to be repaired 1.3 Clean vehicle panel for repair 1.4 Determine degree of repair	<ul style="list-style-type: none"> <li>• Demonstration</li> <li>• Discussion</li> </ul>	<ul style="list-style-type: none"> <li>• Written examination</li> <li>• Actual performance</li> <li>• Interview/ Questioning</li> </ul>
2. Repair Body Panel	2.1 Prepare welding materials and equipment 2.2 Repair body panel 2.3 Inspect frame and body panel alignment 2.4 Apply body panel anti-corrosion	<ul style="list-style-type: none"> <li>• Demonstration</li> <li>• Discussion</li> </ul>	<ul style="list-style-type: none"> <li>• Interview/ Questioning</li> <li>• Actual performance</li> <li>• Portfolio</li> </ul>
3. Replace Damaged Parts with Pre-Fabricated Parts	3.1 Prepare pattern 3.2 Layout and mark dimensions/features on workplace 3.3 Cut, chip and file flat workpiece 3.4 Drill, ream and lap holes 3.5 Trial-fit fabricated panel	<ul style="list-style-type: none"> <li>• Demonstration</li> <li>• Discussion</li> </ul>	<ul style="list-style-type: none"> <li>• Interview/ Questioning</li> <li>• Actual performance</li> <li>• Portfolio</li> </ul>

### 3.2 TRAINING DELIVERY

The delivery of training should adhere to the design of the curriculum. Delivery should be guided by the 10 basic principles of competency-based TVET.

- The training is based on curriculum developed from the competency standards;
- Learning is modular in its structure;
- Training delivery is learner-centered and should accommodate individualized and self-paced learning strategies;
- Training is based on work that must be performed;
- Training materials are directly related to the competency standards and the curriculum modules;
- Assessment is based in the collection of evidence of the performance of work to the industry required standard;
- Training is based both on and off the job components
- Training program allows for recognition of prior learning (RPL) or current competencies;
- Training allows for multiple entry and exit; and
- Training programs are registered with UTPRAS.

The competency-based TVET system recognizes various types of delivery modes, both on and off-the-job as long as the learning is driven by the competency standards specified by the industry. The following training modalities may be adopted when designing training programs:

- The dualized mode of training delivery is preferred and recommended. Thus programs would contain both in-school and in-industry training or fieldwork components. Details can be referred to the Dual Training System (DTS) Implementing Rules and Regulations.
- Modular/self-paced learning is a competency-based training modality wherein the trainee is allowed to progress at his own pace. The trainer facilitates the training delivery
- Peer teaching/mentoring is a training modality wherein fast learners are given the opportunity to assist the slow learners.
- Supervised industry training or on-the-job training is an approach in training designed to enhance the knowledge and skills of the trainee through actual experience in the workplace to acquire specific competencies prescribed in the training regulations.
- Distance learning is a formal education process in which majority of the instruction occurs when the students and instructor are not in the same place. Distance learning may employ correspondence study, or audio, video or computer technologies.
- Project-Based Instruction is an authentic instructional model or strategy in which students plan, implement and evaluate projects that have real world applications.



### 3.3 TRAINEE ENTRY REQUIREMENTS

This section specifies the qualifications of trainees and educational experience. Other requirements like health and physical requirements are also stated. Passing entry written examinations may also be indicated if necessary.

- With good moral character;
- Ability to communicate both oral and written; and
- Physically and mentally healthy fit

### 3.4 LIST OF TOOLS, EQUIPMENT AND MATERIALS AUTOMOTIVE BODY REPAIRING – NC II

Recommended list of tools, equipment and materials for the training of 25 trainees for Automotive Body Repairing – NC II

TOOLS		EQUIPMENT		MATERIALS	
QTY		QTY		QTY	
4 sets	Wrench, open-end	2 sets	Welding machine, arc	1 kg.	Welding electrodes
4 sets	Wrench, box	2 sets	Welding, oxyacetylene	4 pcs.	Wire brush
4 sets	Wrench, combination	2 sets	Cutter, pneumatic	2 pcs.	G.I. sheets
2 boxes	Wrench, socket	2 sets	Grinder, disc	1 kg.	G.I. wire
4 pcs.	Screwdriver (flat)	1 ea.	Sheet metal bending machine	1 kg.	Filler rod, bronze
4 pcs.	Screwdriver (Phillips)	2 sets	Sander, electric	30 pcs.	Rivets, 1/8, 3/16
4 pcs.	Scraper	2 sets	Bench grinder	2 pcs.	B.I. sheets
4 sets	Dollies	2 sets	Nibbler, portable	2 gallons	Paint remover
2 pcs.	Rule, steel	1 ea.	Bench shear	2 gallons	Metal conditioner
4 sets	Vise grip pliers	1 ea.	Body and fender dent puller	10 pcs.	Chalk stone
4 sets	Tin snip, straight	2 sets	Body and fender tool	30 pcs.	Sandpaper, assorted
2 sets	Drill, electric, portable			200 g.	Bronze welding flux
2 sets	Riveter, pop			1 gallon	Primer paint
2 sets	Dent remover			6 pcs.	Paint brush
2 sets	Pry bar				
8 sets	Hammer, cross peen				
8 sets	Hammer, ball peen				
4 sets	Hammer, rubber				
4 sets	Hammer, plastic				
4 sets	Hand hacksaw				
8 sets	Chisel, cold				
4 sets	Scriber				
2 sets	Combination square				
8 sets	C-clamp			<b>Training Materials:</b>	
6 sets	Pull-push rule				Reference books
2 sets	Wing divider				Manuals
8 sets	Hand files, flat				Catalogs
4 sets	Bench vise				Brochures
6 pcs.	Welding mask				Modules/LEs
12 pcs.	Welding goggle				CDs/Video tapes

### 3.5 TRAINING FACILITIES- AUTOMOTIVE BODY REPAIRING NC II

Based on a class size of 25 students/trainees

SPACE REQUIREMENT	SIZE IN METERS	AREA IN SQ. METERS	TOTAL AREA IN SQ. METERS
- Building (permanent)	27.50 x 28.00	-	770.00
▪ Trainee working space	2.5 x 5.5	13.75 / trainee	343.75
▪ Lecture Room	9.00 x 10.00	90.00	90.00
▪ Learning Resource Center	5.00 x 8.00	40.00	40.00
▪ Facilities/ Equipment/ Circulation Area	-	-	296.25

### 3.1 TRAINER'S QUALIFICATIONS FOR AUTOMOTIVE/LAND TRANSPORT SECTOR

#### AUTOMOTIVE BODY REPAIRING – NC II

##### TRAINER QUALIFICATION (TQ II)

- Must be a holder of Automotive Body Repairing NC III
- Must have undergone training on Training Methodology II (TM II)
- Must be computer literate
- Must be physically and mentally fit
- \*Must have at least 2 years job/industry experience
- Must be a civil service eligible (for government position or appropriate professional license issued by the Professional Regulatory Commission)

\* Optional. Only when required by the hiring institution.

Reference: TESDA Board Resolution No. 2004 03

### 3.7 INSTITUTIONAL ASSESSMENT

Institutional assessment is undertaken by trainees to determine their achievement of units of competency. A certificate of achievement is issued for each unit of competency.

## SECTION 4 NATIONAL ASSESSMENT AND CERTIFICATION ARRANGEMENTS

- 4.1 To attain the National Qualification of Automotive Body Repairing NC II, the candidate must demonstrate competence in all the units through project-type assessment covering all the units listed in Section 1. Successful candidates shall be awarded a National Certificate signed by the TESDA Director General.
- 4.2 Individuals aspiring to be awarded the qualification of Automotive Body Repairing NC II must acquire Certificate of Competency in all the following individual core units of the Qualification. Candidates may apply for assessment in any accredited assessment center.
  - 4.2.1 Prepare Vehicle Body panel
  - 4.2.2 Repair Body Panel
  - 4.2.3 Replace Damaged Parts with Pre-Fabricated Parts

Successful candidates shall be awarded Certificates of Competency (COC).
- 4.3 Accumulation and submission of all COCs acquired for the relevant units of competency comprising a qualification, an individual shall be issued the corresponding National Certificate.
- 4.4 Assessment shall focus on the core units of competency. The basic and common units shall be integrated or assessed concurrently with the core units.
- 4.5 The following are qualified to apply for assessment and certification:
  - 4.5.1 Graduates of formal, non-formal and informal including enterprise-based training programs.
  - 4.5.2 Experienced workers (wage employed or self employed)
- 4.6 The guidelines on assessment and certification are discussed in detail in the "Procedures Manual on Assessment and Certification" and "Guidelines on the Implementation of the Philippine TVET Qualification and Certification System (PTOQS)".

### COMPETENCY MAP - AUTOMOTIVE SECTOR

<b>CORE COMPETENCIES</b>	Performs gas engine tune up	Perform diesel engine tune up	Service automotive battery	Service ignition system	Test & repair wiring/lighting system	Perform under - chassis preventive maintenance	Service starting system	Service suspension system
	Service charging system	Service engine mechanical system	Service clutch system	Service differential & front/rear axle	Service steering system	Overhaul manual transmission	Service brake system	Service electronics body management system
	Test & repair electrical security system/components	Service electronic engine management system	Service automatic transmission	Overhaul engines & associated components	Perform maintenance service check up & repair to AC	Install auto AC system	Service AC compressor & associated component	Carry out pre - repair operation on engine components
	Service electronic drive management system	Service diesel engine management system & component	Service diesel fuel injection system components	Service emission control system	Interpret technical manual specification of engine components	Disassemble engine block & sub -assemblies, check tolerances & components	Disassemble engine sub -assemblies/ cylinder head & check components	Inspect engine components & determined preferred action
	Carry out machining operations	Set, operate & monitor specialized machine	Use and maintain measuring instruments	Assemble engine block & sub -assemblies, check tolerances & components	Assemble engine sub - assemblies/ cylinder heads and check components	Perform special color matching	Assess auto painting jobs	Prepare undamaged surface for painting
	Prepare damaged surface for painting	Apply masking	Spray solid color paints	Repair solid color paints	Perform Polishing	Perform solid/ metallic color mixing	Spray metallic color paint	Repair metallic or special color paint
	Spray pearl or mica color paint	Prepare vehicle body for repair	Repair body panel	Replace damaged panel/parts with pre - fabricated panel				
<b>COMMON COMPETENCIES</b>	Perform mensuration and calculation	Move and position vehicle	Apply appropriate sealant/adhesive	Use and apply lubricant/ coolant	Read, interpret and apply specification and manuals	Perform Shop maintenance		
	Interpret/draw technical drawing	Prepare job estimate/ costing						
<b>BASIC COMPETENCIES</b>	Receive and respond workplace communication	Work with Other	Practice basic housekeeping procedures	Demonstrate work values	Lead in workplace communication	Develop and practice negotiation skills	Use relevant technologies	Solve workplace problems related to work activities
	Participate in workplace communication	Work in team environment	Practice career professionalism	Practice occupational health and safety procedures	Lead small Team	Use mathematical concepts and techniques	Develop team and individual	Apply problem solving techniques in the workplace
	Plan and organize work	Utilize specialist communication skills						

Legend:  
Automotive Body Repairing NC II

## DEFINITION OF TERMS

- 1. Cold Welding** Process of repairing a crack in a metal by drilling a hole through the crack, threading the hole, and screwing in a section of threaded rod to form a seal.
- 2. Fender** Panel structure that enclosed the outside wheel
- 3. Hammer off dolly** Metal finishing technique used to level metal
- 4. Hammer on dolly** Metal finishing technique used to stretch metal
- 5. Heavy-duty vehicle** refers to buses, trucks and similar vehicles used for road transport of passengers and goods powered by a diesel or gasoline engine of 180 hp or above, with six or more cylinders, having six or more wheels and with net weight of 12,000 kgs or more
- 6. Honing** The process of restoring the cylinder into a straight, round shape and smooth surface by machining to remove only a small amount of metal or to obtain the desired cylinder finished after reborring.
- 7. Inner panel** Reinforcing metal panel connected to outer panel
- 8. Light duty vehicles** refer to a passenger vehicle with diesel or gasoline engine equipped with 3-4 cylinders with a rating from 50 up to 170 hp; typically having four wheels and designed for operation on ordinary roads.
- 9. Reborring** Reconditioning process by cutting or grinding some amount of metals from the cylinder surface to fit the nearest oversize piston.
- 10. Re-sleeving** Restoring the cylinder condition into standard diameter by removing the worn sleeves and replacing them with new ones.
- 11. Tolerance** The range of variation in a given dimension.
- 12. Metal bumping** Returning damaged metal to its original shape

<b>13. Metal conditioner</b>	A chemical cleaner that removes dust and corrosion from bare metal and helps prevent rusting
<b>14. Quarter panel</b>	The side panel extending from the lock pillar to the rear of the vehicle. This includes the wheel opening, rear door, rear pillar and sail panel
<b>15. Radiator support panel</b>	The front structural part of a unibody vehicle
<b>16. Rocker panel</b>	The narrow, outer panel attached below the car door
<b>17. Roof panel</b>	Forms the top of the passenger compartment
<b>18. Undercoat</b>	A first coat; primer; sealer or surfacer
<b>19. Unibody</b>	Utilized construction

## ACKNOWLEDGEMENTS

The Technical Education and Skills Development Authority (TESDA) wishes to extend thanks and appreciation to the many representatives of business, industry, academe and government agencies who rendered their time and expertise to the development and validation of this Training Regulation.

### THE TESDA ADVISORY PANEL (TAP)

**MR. ALLEN RAYMUND A. RUFO**

TAP Chairman – Automotive Sector  
TOYOTA Motors Philippines, Corp.  
Parañaque city  
Automotive Industry Board Foundation, Inc  
(AIBFI)  
Suite 1206, 12 th flr. Jollibee Center  
San Miguel Avenue, Pasig city

**MS. MA. CLARISSA V. FUNESTO**

TAP Alternate Chairperson – Automotive Sector  
HONDA Phils. Inc.  
Parañaque city  
Automotive Industry Board Foundation  
(AIBFI)  
Suite 1206, 12 th flr. Jollibee Center  
San Miguel Avenue, Pasig city

**MR. SIXTO D. CAYPUNO**

TAP Member – Academe  
Samson Technical College  
Cubao, Quezon City

**MR. BENITO S. FELIX**

TAP Member – Academe  
Technological University of the Philippines  
Tagig.MM.

**MR. ANGEL Y. DIMALANTA**

TAP Member – Labor  
TOYOTA Motors Philippines Corporation  
Supervisory Union  
Automotive Industry Workers Alliance  
Km.15 So. Superhighway Parañaque city MM.

**MR. ALLAN V. MERCADO**

Member – Labor  
Automotive Service Association  
TESDA Region VII Compound  
Mandaue city

### THE TECHNICAL AND INDUSTRY EXPERT PANEL

#### AUTOMOTIVE BODY REPAIRING

**RUDOLFO B. VELASCO**

RBV Auto Management and Consultancy  
New Manjila, Quezon city

**NESTOR PARAYNO**

**BENIGNO L. AQUINO**  
**APOLINAR R. RAMPOLA**  
Toyota Motors Phils, Sta. Rosa, Laguna

**ENRIQUE M. SARMIENTO**

Mantrade Devt. Corp.  
Pasong Tamo Extension, Makati

The PARTICIPANTS in the National Validation of this Training Regulation

**Region IX**  
**Region X**

**Region XI**  
**Region XII**  
**CARAGA Region**

Members of the TESDA Board

The MANAGEMENT and STAFF of the TESDA Secretariat

TESDA EXCOM

**SSCO**

**OFTVET**

**NITVET**

**TESDA Regional/Provincial Offices**  
**(Regions IX, X, XI, XII and Caraga)**