

TRAINING REGULATIONS

TINSMITHING (AUTOMOTIVE MANUFACTURING) NC II



AUTOMOTIVE MANUFACTURING

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

*Technical Education and Skills Development Act of 1994
(Republic Act No. 7796)*

Section 22, “Establishment and Administration of the National Trade Skills Standards” of the RA 7796 known as the TESDA Act mandates TESDA to establish national occupational skill standards. The Authority shall develop and implement a certification and accreditation program in which private industry group and trade associations are accredited to conduct approved trade tests, and the local government units to promote such trade testing activities in their respective areas in accordance with the guidelines to be set by the Authority.

The Training Regulations (TR) serve as basis for the:

1. Competency assessment and certification;
2. Registration and delivery of training programs; and
3. Development of curriculum and assessment instruments.

Each TR has four sections:

- Section 1 Definition of Qualification - refers to the group of competencies that describes the different functions of the qualification.
- Section 2 Competency Standards - gives the specifications of competencies required for effective work performance.
- Section 3 Training Standards - contains information and requirements in designing training program for certain Qualification. It includes curriculum design, training delivery; trainee entry requirements; tools, equipment and materials; training facilities; trainer's qualification; and institutional assessment.
- Section 4 National Assessment and Certification Arrangements - describes the policies governing assessment and certification procedure

**TABLE OF CONTENTS
AUTOMOTIVE MANUFACTURING**

TINSMITHING (AUTOMOTIVE MANUFACTURING) NC II

	Page No.
SECTION 1	
TINSMITHING (AUTOMOTIVE MANUFACTURING) NC II QUALIFICATION	1
SECTION 2	
COMPETENCY STANDARD	
• Basic Competencies	2-14
• Common Competencies	15-29
• Core Competencies	30-35
SECTION 3	
TRAINING STANDARDS	
3.1 Curriculum Design	
• Basic Competencies	36
• Common Competencies	37
• Core Competencies	38
3.2 Training Delivery	38
3.3 Trainee Entry Requirements	39
3.4 List of Tools, Equipment and Materials	39
3.5 Training Facilities	40
3.6 Trainers' Qualifications	40
3.7 Institutional Assessment	40
SECTION 4	
NATIONAL ASSESSMENT AND CERTIFICATION ARRANGEMENTS	41
Annex A: COMPETENCY MAP	42
DEFINITION OF TERMS	43
ACKNOWLEDGEMENTS	44

TRAINING REGULATIONS FOR

TINSMITHING (AUTOMOTIVE MANUFACTURING) NC II

SECTION 1 TINSMITHING (AUTOMOTIVE MANUFACTURING) NC II QUALIFICATION

The TINSMITHING (AUTOMOTIVE MANUFACTURING) NC II Qualification consists of competencies that a person must achieve to perform tinsmith operation in an automotive manufacturing work area. Tinsmithing involves cutting, forming, straightening, and repairing sheet metal surfaces of vehicles. It also includes sanding and grinding the shaped or repaired metal surface and joints of welded or brazed to comply with the required finish. It also includes competencies on welding & brazing in accordance with manufacturer's specification.

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

The Units of Competency comprising this Qualification include the following

CODE NO.	BASIC COMPETENCIES
500311105	Participate in Workplace Communication
500311106	Work in Team Environment
500311107	Practice Career Professionalism
500311108	Practice Occupational Health and Safety procedures
CODE NO.	COMMON COMPETENCIES
ALT311202	Perform Mensuration and Calculation
ALT742201	Read, Interpret and Apply engineering manuals/Specifications
ALT723202	Move and Position Vehicle
ALT723201	Apply Appropriate Sealant/Adhesive
ALT 723205	Perform Shop Maintenance
CODE NO.	CORE COMPETENCIES
ALT827314	Weld and Braze Automotive Body Shell
ALT827315	Perform Tinsmith Operation

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

- Tinsmith (Automotive Manufacturing)**

SECTION 2 COMPETENCY STANDARDS

This section gives the details of the contents of the basic, common and core units of competency required in TINSMITHING (AUTOMOTIVE MANUFACTURING) 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 terms</i> are elaborated in the Range of Variables
1. Obtain and convey workplace information	1.1 Specific and relevant information is accessed from appropriate sources 1.2 Effective questioning , active listening and speaking skills are used to gather and convey information 1.3 Appropriate medium 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 storage 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 protocols 2.4 Workplace interactions are conducted in a courteous manner 2.5 Questions about simple routine workplace procedures and matters concerning working conditions of employment are tasked and responded to 2.6 Meetings outcomes are interpreted and implemented
3. Complete relevant work related documents	3.1 Range of forms relating to conditions of employment are completed accurately and legibly 3.2 Workplace data are 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 interactions 5.2. Telephone conversation 5.3. Electronic and two-way radio communication 5.4. Written communication including electronic mail, memos, instruction and forms 5.5. Non-verbal communication 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> <ol style="list-style-type: none"> 1.1. Prepared written communication following standard format of the organization 1.2. Accessed information using communication equipment 1.3. Made use of relevant terms as an aid to transfer information effectively 1.4. Conveyed information effectively adopting the formal or informal communication
<p>2. Underpinning knowledge</p>	<ol style="list-style-type: none"> 2.1. Effective communication 2.2. Different modes of communication 2.3. Written communication 2.4. Organizational policies 2.5. Communication procedures and systems 2.6. Technology relevant to the enterprise and the individual's work responsibilities
<p>3. Underpinning skills</p>	<ol style="list-style-type: none"> 3.1. Follow simple spoken language 3.2. Perform routine workplace duties following simple written notices 3.3. Participate in workplace meetings and discussions 3.4. Complete work related documents 3.5. Estimate, calculate and record routine workplace measures 3.6. Four fundamental operations (addition, subtraction, division and multiplication) 3.7. Ability to relate to people of social range in the workplace 3.8. Gather and provide information in response to workplace Requirements
<p>4. Resource implications</p>	<p>The following resources MUST be provided:</p> <ol style="list-style-type: none"> 4.1. Fax machine 4.2. Telephone 4.3. Writing materials 4.4. Internet
<p>5. Method of assessment</p>	<p>Competency MUST be assessed through:</p> <ol style="list-style-type: none"> 5.1. Direct observation 5.2. Oral interview and written test
<p>6. Context of assessment</p>	<ol style="list-style-type: none"> 6.1. Competency may be assessed individually in the actual workplace or through accredited institution

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.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables
1. Describe team's role and scope	1.1. The <i>role and objective of the team</i> is identified from available <i>sources of information</i> 1.2. Team parameters, reporting relationships and responsibilities are identified from team discussions and appropriate external sources
2. Identify own role and responsibility within the 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 <i>workplace context</i> 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 judgment 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"> 1.1. Operated in a team to complete workplace activity 1.2. Worked effectively with others 1.3. Conveyed information in written or oral form 1.4. Selected and used appropriate workplace language 1.5. Followed designated work plan for the job 1.6. Reported outcomes
<p>2. Underpinning knowledge</p>	<ul style="list-style-type: none"> 2.1. Communication process 2.2. Team structure 2.3. Team roles 2.4. Group planning and decision making
<p>3. Underpinning skills</p>	<ul style="list-style-type: none"> 3.1. Communicate appropriately, consistent with the culture of the workplace
<p>4. Resource implications</p>	<p>The following resources MUST be provided:</p> <ul style="list-style-type: none"> 4.1. Access to relevant workplace or appropriately simulated environment where assessment can take place 4.2. Materials relevant to the proposed activity or tasks
<p>5. Method of assessment</p>	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> 5.1. Observation of the individual member in relation to the work activities of the group 5.2. Observation of simulation and or role play involving the participation of individual member to the attainment of organizational goal 5.3. Case studies and scenarios as a basis for discussion of issues and strategies in teamwork
<p>6. Context of assessment</p>	<ul style="list-style-type: none"> 6.1. Competency may be assessed in workplace or in a simulated workplace setting 6.2. Assessment shall be observed while task are being undertaken whether individually or in group

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.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> 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 is are maintained in the course of managing oneself based on performance evaluation 1.3 Commitment to the organization and its goal is demonstrated in the performance of duties
2. Set and meet work priorities	2.1 Competing demands are prioritized to achieve personal, team and organizational goals and objectives. 2.2 Resources 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
3. Maintain professional growth and development	3.1 Trainings and career opportunities are identified and availed of based on job requirements 3.2 Recognitions are -sought/received and demonstrated as proof of career advancement 3.3 Licenses and/or certifications 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"> 1.1 Attained job targets within key result areas (KRAs) 1.2 Maintained intra and interpersonal relationship in the course of managing oneself based on performance evaluation 1.3 Completed trainings and career opportunities which are based on the requirements of the industries 1.4 Acquired and maintained licenses and/or certifications according to the requirement of the qualification
<p>2. Underpinning knowledge</p>	<ul style="list-style-type: none"> 2.1 Work values and ethics (Code of Conduct, Code of Ethics, etc.) 2.2 Company policies 2.3 Company-operations, procedures and standards 2.4 Fundamental rights at work including gender sensitivity 2.5 Personal hygiene practices
<p>3. Underpinning skills</p>	<ul style="list-style-type: none"> 3.1 Appropriate practice of personal hygiene 3.2 Intra- and Interpersonal skills 3.3 Communication skills
<p>4. Resource implications</p>	<p>The following resources MUST be provided:</p> <ul style="list-style-type: none"> 4.1 Workplace or assessment location 4.2 Case studies/scenarios
<p>5. Method of assessment</p>	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> 5.1 Portfolio Assessment 5.2 Interview 5.3 Simulation/Role-plays 5.4 Observation 5.5 Third Party Reports 5.6 Exams and Tests
<p>6. Context of assessment</p>	<ul style="list-style-type: none"> 6.1 Competency may be assessed in the work place or in a simulated work place setting

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.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables
1. Identify hazards and risks	1.1 Safety regulations and workplace safety and hazard control practices and procedures are clarified and explained based on organization procedures 1.2 Hazards/risks 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 Contingency measures 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
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 Personal protective equipment (PPE) 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 Emergency-related drills and trainings are participated in as per established organization guidelines and procedures 4.2 OHS personal records are completed and updated in accordance with workplace requirements

RANGE OF VARIABLES

VARIABLE	RANGE
1. Safety regulations	May include but are not limited to: <ol style="list-style-type: none"> 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: <ol style="list-style-type: none"> 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"> • Psychological factors – over exertion/ excessive force, awkward/static positions, fatigue, direct pressure, varying metabolic cycles • Physiological factors – monotony, personal relationship, work out cycle
3. Contingency measures	May include but are not limited to: <ol style="list-style-type: none"> 3.1 Evacuation 3.2 Isolation 3.3 Decontamination 3.4 (Calling designed) emergency personnel
4. PPE	May include but are not limited to: <ol style="list-style-type: none"> 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

5. Emergency-related drills and training	5.1 Fire drill 5.2 Earthquake drill 5.3 Basic life support/cardio pulmonary resuscitation (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"> 1.1 Explained clearly established workplace safety and hazard control practices and procedures 1.2 Identified hazards/risks in the workplace and its corresponding indicators in accordance with company procedures 1.3 Recognized contingency measures during workplace accidents, fire and other emergencies 1.4 Identified terms of maximum tolerable limits based on threshold limit value (TLV) 1.5 Followed Occupational Health and Safety (OHS) procedures for controlling hazards/risks in workplace 1.6 Used Personal Protective Equipment (PPE) in accordance with company OHS procedures and practices 1.7 Completed and updated OHS personal records in accordance with workplace requirements
<p>2. Underpinning knowledge</p>	<ul style="list-style-type: none"> .1.1. OHS procedures and practices and regulations .1.2. PPE types and uses .1.3. Personal hygiene practices .1.4. Hazards/risks identification and control .1.5. Threshold limit value (TLV) .1.6. OHS indicators .1.7. Organization safety and health protocol .1.8. Safety consciousness .1.9. Health consciousness
<p>3. Underpinning skills</p>	<ul style="list-style-type: none"> 3.1 Practice of personal hygiene .2. Hazards/risks identification and control skills .3. Interpersonal skills 3.4 Communication skills
<p>4. Resource implications</p>	<p>The following resources MUST be provided:</p> <ul style="list-style-type: none"> 4.1 Workplace or assessment location 4.2 OHS personal records 4.3 PPE 4.4 Health records
<p>5. Method of assessment</p>	<p>Competency MUST be assessed through:</p> <ul style="list-style-type: none"> 5.1 Portfolio Assessment 5.2 Interview 5.3 Case Study/Situation
<p>6. Context of assessment</p>	<ul style="list-style-type: none"> 6.1 Competency may be assessed in the work place or in a simulated work place setting

**COMMON COMPETENCIES
(AUTOMOTIVE MANUFACTURING-ASSEMBLY)**

UNIT OF COMPETENCY : PERFORM MENSURATION AND CALCULATION

UNIT CODE : ALT311202

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes in measuring and calculating using tools and measuring instrument. It also covers caring for and handling of measuring instrument.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> 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 <i>measuring instrument</i> 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 <i>Calculation</i> needed to complete work tasks are performed using the four fundamental operation 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 are kept free from corrosion 3.2 Measuring instruments are not dropped to avoid damage 3.3 Measuring instruments are cleaned before and after using.

RANGE OF VARIABLES

VARIABLE	RANGE
1. Measuring instruments	Measuring instruments includes: <ul style="list-style-type: none"> 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	Includes calculation of the following: <ul style="list-style-type: none"> 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

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1. Selected measuring instruments 1.2. Carried-out measurements and calculations. 1.3. Maintained measuring instruments
2. Underpinning knowledge	2.1 Types of measuring instruments and its uses 2.2 Safe handling procedures in using measuring instruments 2.3 Four fundamental operation of mathematics 2.2 Formula for volume, area, perimeter and other geometric figures
3. Underpinning skills	3.1 Caring and handling measuring instruments 3.2 Calibrating and using measuring instruments 3.3 Performing calculation by Addition, Subtraction, Multiplication and Division 3.4 Visualizing objects and shapes 3.5 Interpreting formula for volume, area, perimeter and other geometric figures
4. Resource implications	The following resources MUST be provided: 4.1 Workplace location 4.2 Measuring instrument appropriate to servicing processes 4.3 Instructional materials relevant to the propose activity
5. Method of assessment	Competency may be assessed through: 5.1 Observation with questioning 5.2 Written or oral examination 5.3 Interview 5.4 Demonstration with questioning
6. Context of assessment	6.1 Competency elements must be assessed in a safe working environment 6.2 Assessment may be conducted in a workplace or simulated environment

UNIT OF COMPETENCY: **READ, INTERPRET AND APPLY ENGINEERING DRAWINGS**

UNIT CODE **:** **ALT742201**

UNIT DESCRIPTOR **:** This unit deals with identifying, interpreting and applying automotive mechanical assembly engineering manuals / specifications in accordance with requirements of the job.

ELEMENT	PERFORMANCE CRITERIA
	<i>Italicized</i> terms are elaborated in the Range of Variables
1. Identify and access engineering manuals / specifications	1.1 Appropriate manuals 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 Vehicle assembly manual 1.3 Vehicle quality standard manual 1.4 Vehicle specification manual

EVIDENCE GUIDE

1.Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Identified and accessed manual/specification 1.2 Interpreted manuals 1.3 Applied information in manuals 1.4 Stored manuals
12 Underpinning knowledge	2.1 Types of manuals used in automotive industry 2.2 Identification of symbols used in the manuals 3.1 Identification of units of measurements 3.2 Unit conversion
13 Underpinning skills	3.1.Reading and comprehension skills required to identify and interpret automotive manuals and specifications 3.2.Accessing information and data
14 Resource Implications	The following resources MUST be provided: 4.1. All manuals/catalogues relative to Automotive 4.2. Work order 4.3. Actual vehicle or simulator
15 Method of assessment	Competency MUST be assessed through: 5.1.Observation with questioning 5.2.Interview
16 Context of assessment	6.1 Assessment must be undertaken in accordance with the endorsed TESDA assessment guidelines 6.2 Assessment may be conducted in the workplace or a simulated environment.

UNIT OF COMPETENCY : MOVE AND POSITION VEHICLE

UNIT CODE : ALT723202

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

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables
1. Prepare vehicle for driving	1.1 Check-up procedures is 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 parking safety techniques and procedure
3. Check the vehicle	3.1 Vehicle position is checked as per required 3.2 Vehicle is checked for external damages

RANGE OF VARIABLE

VARIABLE	RANGE
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 aspects of competency	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Prepared vehicle for driving. 1.2 Moved and positioned vehicle 1.3 Checked the vehicle.
2. Underpinning knowledge and attitudes	<ul style="list-style-type: none"> 2.1 Driver's code of conduct 2.2 Workshop signs and symbols 2.3 Driving skills 2.4 Vehicle accessories for safe driving and parking
3. Underpinning skills	<ul style="list-style-type: none"> 3.1 Ability to handle vehicle/maneuver vehicle the easiest way 3.2 Immediate response to accident 3.3 Preparing vehicle for driving 3.4 Parking downhill, uphill, parallel 3.5 Shifting gears 3.6 Maneuvering
4. Resource implications	<p>The following resources MUST be provided:</p> <ul style="list-style-type: none"> 4.1 Driving range/area 4.2 Appropriate vehicle for driving 4.3 Vehicle accessories
5. Method of assessment	<p>Competency MUST be assessed through:</p> <ul style="list-style-type: none"> 5.1 Observation with questioning 5.2 Written or oral examination
6. Context of assessment	<ul style="list-style-type: none"> 6.1 Assessment must be undertaken in accordance with the endorsed TESDA assessment guidelines 6.2 Assessment of practical skills must be done in a workplace or simulated environment.

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

UNIT CODE : **ALT723201**

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

ELEMENT	PERFORMANCE CRITERIA <i>Italicized</i> terms are elaborated in the Range of Variables
1. Identify appropriate sealant / adhesive	1.1 Sealant/adhesive is selected in line with job requirements and manufacturer's specification 1.2 Sealant/adhesive checking is performed to ensure that product is fit for use.
2. Prepare surface for sealant / adhesive application	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 Tools and equipment used to apply sealant/adhesive are appropriate to job requirements 3.6 Safety are observed and PPE are worn in accordance with industry SOP 3.7 Hazards 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. Adhesive/Sealant checking	Adhesive/Sealant checking includes: 2.1 Expiry date 2.2 Free of contamination 2.3 Cap/Covers 2.4 Tightly closed 2.5 Concentration
3. Tools and equipment	Tools and equipment include: 3.1 Putty knife 3.2 Scraper 3.3 Compressor 3.4 Steel brush 3.5 Paint brush 3.6 Rubber hammer 3.7 Hand tools Personal protective equipment include: 3.8 Gloves 3.9 Apron 3.10 Safety shoes 3.11 Goggles 3.12 Gas mask
4. Safety	Safety includes: 4.1 Ventilation 4.2 Handling of Flammable/Irritating substances 4.3 Use of Personal Protective Equipment
5. Hazards	Hazard includes: 5.1 Fumes 5.2 Skin irritation 5.3 Burns

EVIDENCE GUIDE

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

UNIT OF COMPETENCY : **PERFORM SHOP MAINTENANCE**

UNIT CODE : **ALT723205**

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

ELEMENT	PERFORMANCE CRITERIA <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 <i>cleaning requirement</i> 1.2 <i>Work area</i> is checked and cleaned 1.3 Wet surface/spot in work area is wiped and dried
2. Store/arrange tools and shop equipment	1.5 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. Cleaning requirement	1.1 Cleaning solvent 1.2 Inventory of supplies, tools, equipment, facilities 1.3 List of mechanics/technicians 1.4 Rags 1.5 Broom 1.6 Map 1.7 Pail 1.8 Used oil container 1.9 Oiler 1.10 Dust/waste bin
2. Work Area	Work areas include: 2.1 Workshop areas for assembly of automotive vehicle and/or outdoor power equipment 2.2 Open workshop and enclosed, ventilated office area 2.3 Other variables may include workshop with: <ul style="list-style-type: none"> • Mess hall • Wash room • Comfort room

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 of 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 : WELD AND BRAZE AUTOMOTIVE BODY SHELL

UNIT CODE : ALT827314

UNIT DESCRIPTOR : This unit covers the skills knowledge and attitudes required to perform welding and brazing operation including repair of defects on automotive body shells.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized</i> terms are elaborated in the Range of Variables
1. Prepare body shell for welding and brazing operation	1.1 Tools, equipment and PPEs are selected and prepared in accordance with standard operating procedures. 1.2 Body shell is checked for compliance with job requirement 1.3 Corrective measures are undertaken to rectify body shell errors and defects in accordance with standard operating procedures 1.4 Body shell is prepared based on standard operating procedure
2. Perform welding	2.1 Areas/Sections for welding are identified based on the standards/ job specification requirements 2.2 Welding is applied to designated areas/sections based on the standard welding procedure 2.3 Safety standards are followed in accordance with Occupational Health and Safety (OHS) requirements
3. Perform Brazing	3.1 Brazing tools, equipment and materials are prepared in accordance with the job requirements 3.2 Areas/Sections for brazing are identified based on the standards/ job specification requirements 3.3 Appropriate brazing jigs are installed in accordance with the job requirements 3.4 Brazing is applied to designated areas/sections based on the company standard 3.5 Brazed areas are ground and polished to the required finish in accordance with company standards 3.6 Safety standards are followed in accordance with Occupational Health and Safety (OHS) requirements

RANGE OF VARIABLES

VARIABLE	RANGE
1. Tools and Equipment	1.1 Welding Machine (MIG) 1.2 Pneumatic sander and grinder 1.3 File and rubber mallets 1.4 Pneumatic impact gun 1.5 Measuring equipment/ instrument for clearances and alignments
2. Personal Protective Equipment	Wearing of personal protective equipment include: 2.1 cotton gloves 2.2 apron 2.3 goggles 2.4 safety shoes
3. Body shell	1.1 Passenger vehicle 1.2 Commercial vehicle 1.3 Light truck
4. Defects	Defects and damages include but not limited to: 4.1 excess weld and metal 4.2 dents and wavy metal 4.3 sanding and/or file marks 4.4 poor brazing 4.5 lack of welding 4.6 poor or incomplete weld 4.6 poor clearance and misalignment of skin panels

EVIDENCE GUIDE

1. Critical aspect of competency	<p>The Assessment requires evidence that the candidate :</p> <ul style="list-style-type: none"> 1.1 Prepared body shell for welding and brazing 1.2 Performed welding 1.3 Performed brazing 1.4 Finished body shell by grinding and polishing 1.5 Followed standard safety procedure in the workplace
2. Underpinning knowledge and attitudes	<ul style="list-style-type: none"> 2.1 Standard Operating Procedure of Welding and Brazing 2.2 Standard Preventive Maintenance of tools and equipment relevant to operation 2.3 Welding and brazing areas/ sections in body shell 2.4 Defects in body shell 2.5 Techniques and procedures in rectifying welding/brazing defects 2.6 Tools and procedures used in grinding and polishing body shells 2.7 Safety standards and housekeeping in the workplace 2.8 Shop communication procedures and systems 2.9 Work in team environment
3. Underpinning skills	<ul style="list-style-type: none"> 3.1 Interpret standard information regarding the operation 3.2 Handling hand and pneumatic/power tools 3.3 Organizing and planning work activities 3.4 Using measuring equipment/instrument
4. Resource implication	<p>The following resources must be provided:</p> <ul style="list-style-type: none"> 4.1 Adequate working area for Welding and Brazing 4.2 Welding machine (MIG), accessories and supplies 4.3 Pneumatic sander, grinder, and polisher 4.4 Pneumatic impact gun 4.5 Standard jigs 4.6 Body shell 4.7 PPE
5. Method of assessment	<p>Competency must be assessed through:</p> <ul style="list-style-type: none"> 5.1 Direct observation while the tasks are being performed 5.2 Demonstration with questioning 5.2 Written examination
6. Context of assessment	<p>Competency assessment may be conducted in the workplace or simulated environment</p>

UNIT OF COMPETENCY: PERFORM TINSMITH OPERATION

UNIT CODE : ALT827314

UNIT DESCRIPTOR : This unit covers the skills, knowledge and attitudes required to install skin panels and perform metal finishing operation in automotive manufacturing.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables
1. Install skin panels	1.1 Tools and equipment are selected and prepared in accordance with standard operating procedures 1.2 Skin panels are checked for compliance with the job requirement 1.3 Skin panels are installed based on company standards procedures 1.4 Task is performed using appropriate PPE and without incurring damage to the body shell and skin panels
2. Inspect installed skin panels	2.1 Clearances and alignments of installed skin panels are checked for compliance with work specification 2.2 Bolt fitting of panel parts is checked based on company standard 2.3 Corrective measures are undertaken to rectify incorrect clearances and/or misalignment
3. Perform metal finishing operation	3.1 Inspect the main body shell based on the standard inspection procedure 3.2 Defects and/or damages are detected and marked or labeled after inspection in accordance with standard company procedures 3.3 Metal finishing operation is performed based on company standard 3.4 Finished main body shell is 100% free of any defects and damages

RANGE OF VARIABLES

VARIABLE	RANGE
1. Tools and Equipment	1.1 Pneumatic impact range 1.2 File and Pry Bar 1.3 Rubber Mallet 1.4 Set of Wrench 1.5 Set of Sockets 1.6 Measuring Equipment for clearance and alignment 1.7 Pneumatic Sander 1.8 Standard Jigs
2. Skin panels	Automotive skin panels includes: 2.1 L _H (Left hand) and R _H (Right hand) Door Panel 2.2 L _H (Left hand) and R _H (Right hand) Fender 2.3 Trunk lid and Hood Panel
3. Body shell	Body shell model include 3.1 Passenger vehicle 3.2 Commercial vehicle 3.3 Light truck
4. Defects and Damages	4.1 Poor skin panel alignment 4.2 Off-standard clearances of skin panel 4.3 Dent and wavy metal defects 4.4 Deep sanding mark 4.5 Deep file mark
5. Metal finishing operation	5.1 Bumping 5.2 Grinding 5.3 Dent fixing 5.4 Polishing using wire brush

EVIDENCE GUIDE

<p>1. Critical aspect of competency</p>	<p>The Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Inspected and installed skin panels 1.2 Checked alignment and clearances of installed skin panels and rectified incorrect clearance and /or misalignment 1.3 Performed metal finishing operation 1.4 Maintained tools and equipment and stored on designated area 1.5 Wore personal protective equipment 1.6 Cleaned and organized working area
<p>2. Underpinning knowledge and attitude</p>	<ul style="list-style-type: none"> 2.1 Vehicle models and their corresponding skin panels 2.2 Causes of incorrect skin panel clearance and misalignment 2.3 Shell body defects and damages and corrective measures 2.4 Standard Operating Procedure of panel Installation 2.5 Standard Preventive Maintenance of all tools and equipment 2.6 Standard safety procedure of the operation 2.7 Tinsmithing procedures 2.8 Metal finishing procedures
<p>3. Underpinning skills</p>	<ul style="list-style-type: none"> 3.1 Handling tools and equipment used in skin panel installation and tinsmith operation 3.2 Interpreting standard information regarding the operation 3.3 Using inspection/ measuring instruments
<p>4. Resource Implication</p>	<p>The following resources must be provided:</p> <ul style="list-style-type: none"> 4.1 Adequate working area for tinsmith Operation 4.2 Tools and equipment appropriate for the activity (jigs, pneumatic impact gun, sander and steel brush, pry bar and file, etc.) 4.3 Skin panels and body shell 4.4 Documents and other relevant reference 4.5 Personal protective equipment: (safety shoes, gloves, goggles, mask)
<p>5. Method of Assessment</p>	<p>Competency must be assessed through:</p> <ul style="list-style-type: none"> 5.1 Direct observation while the tasks are being performed 5.2 Demonstration with questioning 5.3 Written examination 5.4 Third party 5.5 Portfolio
<p>6. Context of Assessment</p>	<p>Competency assessment is conducted in the workplace or in simulated environment</p>

SECTION 3 TRAINING STANDARDS

These standards are set to provide technical and vocational education and training (TVET) providers with information and other important requirements to consider when designing training programs for TINSMITHING OPERATION NC II

3.1 CURRICULUM DESIGN

Course Title: **TINSMITHING OPERATION NC II**

NC Level **NC II**

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

Course Description:

This course is designed to enhance the knowledge, skills and attitudes of an individual in the field of automotive manufacturing in accordance with industry standards. It covers competencies such to perform tinsmith operation which includes welding & brazing in accordance with manufacturer's specification. It also covers headlight focus aiming operations.

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

BASIC COMPETENCIES (18 Hours)

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"> • Group discussion • Interaction • Lecture • Reportorial 	<ul style="list-style-type: none"> • Written test • Practical/ performance test • Interview
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"> • Group discussion • Case studies • Simulation 	<ul style="list-style-type: none"> • Written test • Observation • Simulation • Role playing
3. Practice career professionalism	3.1 Integrate personal objectives with organizational goals 3.2 Set and meet work problems 3.3 Maintain professional growth and development	<ul style="list-style-type: none"> • Interactive lecture • Structure activity • Simulation • Demonstration • Self-paced instruction 	<ul style="list-style-type: none"> • Role play • Interview • Written examination

4. Practice occupational health and safety	4.1 Evaluate hazards and risks 4.2 Control hazards and risks 4.3 Maintain occupational health and safety awareness	<ul style="list-style-type: none"> • Interactive lecture • Simulation • Symposium • Group dynamics • Film viewing 	<ul style="list-style-type: none"> • Situational analysis • Interview • Practical examination • Written exam • Portfolio assessment
--	--	--	--

COMMON COMPETENCIES
(20 Hours)

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach
1. Perform mensuration and calculation	1.1 Select measuring instruments 1.2 Carry out measurements and calculation 1.3 Maintain measuring instruments	<ul style="list-style-type: none"> • Lecture/ Demonstration • Practical exercises • Simulation 	<ul style="list-style-type: none"> • Written test • Oral questioning • Direct observation
2. Read, interpret and apply engineering drawings/specifications	2.1 Identify/access engineering manuals / specification 2.2 Interpret manual 2.3 Apply information in manual 2.4 Store manuals	<ul style="list-style-type: none"> • Lecture/ Demonstration • Dual training 	<ul style="list-style-type: none"> • Direct observation • Interview
3. Move and position vehicle	3.1 Prepare vehicle for driving 3.2 Move and position vehicle 3.3 Check the vehicle	<ul style="list-style-type: none"> • Lecture/ Demonstration • Practical exercises • Simulation 	<ul style="list-style-type: none"> • Written test • Oral questioning • Direct observation
4. Apply appropriate sealant/ adhesive	4.1 Identify appropriate sealant/ adhesive 4.2 Prepare surface for sealant / adhesive application 4.3 Store unused and dispose used sealant/adhesive	<ul style="list-style-type: none"> • Lecture/ Demonstration • Dual training • Distance learning 	<ul style="list-style-type: none"> • Written test • Oral questioning • Direct observation • Interview • Project method
5. Perform shop maintenance	5.1 Inspect/clean tools and work area 5.2 Store/arrange tools and shop equipment 5.3 Dispose waste/used lubricants 5.4 Report damaged tools/equipment	<ul style="list-style-type: none"> • Lecture/ Demonstration • Dual training • Self-paced (modular) 	<ul style="list-style-type: none"> • Written test • Direct observation • Interview • Practical exercises

CORE COMPETENCIES

(88 Hours)

Units of Competency	Learning Outcomes	Methodology	Assessment Approach
1. Weld and braze automotive body shells	1.1 Prepare body shell for Welding and Brazing Application 1.2 Perform Welding Application 1.3 Perform Brazing Application	<ul style="list-style-type: none"> • Practical Training • Direct Observation 	<ul style="list-style-type: none"> • Demonstration • Written Exam
2. Perform tinsmith operation	2.1 Perform installation of skin panel parts 2.2 Inspect installed panel parts 2.3 Perform Tinsmith Operation	<ul style="list-style-type: none"> • Practical Training • Direct Observation 	<ul style="list-style-type: none"> • Demonstration • Written Exam

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 on and off-the-job components;
- Allows for recognition of prior learning (RPL) or current competencies;
- Training allows for multiple entry and exit; and
- Approved training programs are nationally accredited.

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

Trainees or students should possess the following requirements:

- can communicate both oral and written;
- physically and mentally fit; and
- with good moral character

This list does not include specific institutional requirements such as educational attainment, appropriate work experience, and others that may be required of the trainees by the school or training center delivering the TVET program.

3.4 LIST OF TOOLS, EQUIPMENT AND MATERIALS TINSMITH OPERATION NC II

Recommended list of tools, equipment and materials for the training of 15 trainees for Tinsmith Operation NC II

TOOLS		EQUIPMENT		MATERIALS	
QTY		QTY		QTY	
2 sets	Wrench open-end	2 units	Welding machine	1 Kg.	Welding electrodes
3 pcs.	Steel ruler	2 units	Welding Oxyacetylene	1 Kg.	Wire G.I.
3 pcs.	Vise grip plier	2 units	Lifter	1 Kg.	Filler rod, Bronze
3 sets	Pry bar	2 units	Dolly	2 can	Borax
3 sets	Hammer a.) Cross-peen b.) Ball peen			30 pcs.	Sand paper Grit # 280 Grit # 180 Grit # 120
3 units	Rubber mallet			20 pcs.	Sanding Disc Grit # 80 Grit # 100
3 units	Pneumatic sander			10 Kls.	Colored rag
2 units	Pneumatic grinder				
3 units	Pneumatic impact gun				
5 pcs.	File				
3 units	Wire brush				
15 pcs.	Welding goggle				
15 pcs.	Cotton glove				
15 pcs.	Safety shoe				
15 pcs.	Apron				

3.5 TRAINING FACILITIES TINSMITHING OPERATION NC II

Based on a class size of 15 students/trainees

SPACE REQUIREMENT	SIZE IN METERS	AREA IN SQ. METERS	TOTAL AREA IN SQ. METERS
• Building (permanent)	26.00 x 28.00	728.00	728.00
• Trainee Working Space	3.50 x 3.50 per student/trainee	12.25 per student	306.00
• 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	-	-	291.75

3.6 TRAINER'S QUALIFICATIONS FOR AUTOMOTIVE SECTOR MANUFACTURING SUB-SECTOR

TINSMITHING OPERATION NC II TRAINER QUALIFICATION (TQ II)

- Must be a holder of Painting Machine Operation NC II
- 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 TINSMITHING OPERATION (AUTOMOTIVE MANUFACTURING) NC II, the candidate must demonstrate competence in all the units listed in Section 1. Successful candidates shall be awarded a National Certificate signed by the TESDA Director General.

4.2 The qualification of Tinsmithing Operation (Automotive Manufacturing) NC II may be attained through:

4.2.1 Accumulation of Certificates of Competency (COCs) in all the following areas:

4.2.1.1 Weld and Braze Automotive Body Shell

4.2.1.2 Perform Tinsmith Operation

4.3 Assessment shall focus on the core units of competency. The basic and common units shall be integrated or assessed concurrently with the core units.

4.4 The following are qualified to apply for assessment and certification:

1.1.1 Graduates of formal, non-formal and informal including enterprise-based training programs.

1.1.2 Experienced workers (wage employed or self-employed)

4.5 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 (PTQCS).

**COMPETENCY MAP- AUTOMOTIVE SECTOR
MANUFACTURING SUB SECTOR
(ASSEMBLY)**

TINSMITHING (AUTOMOTIVE MANUFACTURING) NC II

CORE COMPETENCIES	Install/Fit out Electrical Parts to Engine Assembly	Install/Fit out Electronic Units to Body Interior Components	Install/Fit out Electrical Parts & Electronic Units to Dash Board Instrument Panel	Install/Fit out Electrical Parts to Exterior and Engine Compartment	Install/Fit out Audio and Video Systems	Perform Headlight Focus Aiming Operation		
	Assemble Mechanical Assemblies Using Jigs/ Fixtures	Mount/ Install Brake Fuel System	Mount/ Install Suspension Drive System	Mount/ Install Power Drive System	Install/Fit Trim Parts/Components	Perform Final Engine Run	Perform Wheel Alignment Operation	
	Perform pre-treatment and Cathodic Electro-deposition process operation	Perform Gray Primer (2 nd Primer) application procedures	Perform Top coat application					
	Weld and braze automotive body shell	Perform tinsmith operation						
COMMON COMPETENCIES	Perform Mensuration and Calculation	Read, Interpret and Apply Engineering Drawings	Move and Position Vehicle	Apply Appropriate Sealant/Adhesives	Perform Shop Maintenance			
BASIC COMPETENCIES	Receive and respond workplace communication	Work with Other	Demonstrate work values	Practice basic housekeeping procedures	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:

TINSMITHING (Automotive Manufacturing) NC II



DEFINITION OF TERMS

- 1. Brazing** **Brazing** is a method of joining metal parts using nonferrous filler metals with high melting points such as copper, silver, and aluminum alloys. Brazing differs from soldering by using a higher temperature; and unlike welding, the parts are not melted. Brazing is best for dissimilar or thinner metal parts difficult to weld or solder.
- 2. Dent** A **dent** is a depression in a surface made by pressure or a blow.
- 3. File** The **file** is any of several hardened steel tools with cutting ridges for forming, smoothing, or reducing especially metallic surfaces.
- 4. Impact gun** An impact gun is a pneumatic tool with attached sockets used to tighten and loosen screws or bolts.
- 5. Jig** A **jig** is a device for guiding a tool or for holding machine work in place.
- 6. Pry bar** A **pry** bar is a heavy steel bar, pointed at one end and shaped like chisel at the other end; used for prying.
- 7. Rubber mallet** The **rubber mallet** is a tool with a large head, used to strike a surface without damaging it.
- 8. Sander** A **sander** is a machine having a powered abrasive-covered disk or belt, used for smoothing or polishing surfaces.
- 9. Skin panel parts** **Skin panel parts** refers to the parts of the vehicle such as hood, trunk lid, L_H-R_H doors, L_H-R_H fender.
- 10. Steel brush (wire)** A **steel brush** is a hard brush wire, providing a high fatigue life and durable cutting action. It is most appropriate for work on steel and iron work pieces, but may also be used on wood, aluminum, brass and copper; however the softer the material to be brushed, the more likely that a steel wire brush will cut into the material and remove base material in addition to the targeted coating or contamination.
- 11. Tinsmith operation** **Tinsmith operation** is a part of the body shop section wherein the additional welding process, brazing application, skin panel installation, dent and other metal damages rectification are performed.
- 12. Welding** **Welding** is the process of joining metals by applying heat, sometimes with pressure and sometimes with an intermediate or filler metal having a high melting point. It is the process of fastening two pieces of metal together softening with heat and applying pressure.

ACKNOWLEDGEMENT

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 TECHNICAL AND INDUSTRY EXPERT PANEL

TINSMITHING (Automotive Manufacturing)

NMPI / CATC/PAFI

Antonio A. Gimenez
Executive Director -
CATC/PAFI

Edgardo P. Zaragoza-
Paint Shop Manager- NMPI
(CATC/PAFI)

Rene Torres
(Labor Representative)
Nissan Motors Philippines
Workers Union-AIWA
Nissan TechnoPark Bo.
Pulong, Sta. Cruz Laguna

Mr. Valentino de Leon
VP- Plant Administration-
NMPI

Rodolfo T. Nunez-
Plant Manager-Nissan
Motors Phils. Inc.(NMPI)
CATC/PAFI

Carina J. Bondad-
Administrative Support Staff,
(CATC/PAFI)

The PARTICIPANTS in the National Validation of this Training Regulation

**ROBERTS RADIATOR PILIPINAS HINO INC. NISSAN MOTOR PHILIPPINES
INC.**

Members of the TESDA Board

The MANAGEMENT and STAFF of the TESDA Secretariat
TESDA EXCOM

Qualification and Standards Office

Florante P. Inoturan
Agnes P. Panem
Abel B. Elpedes