



ADB

COMPETENCY BASED STANDARD

WELDING SERVICE AND REPAIR SECTOR



JOB TITLE

WELDER

ISCO 7212

CERTIFICATE LEVEL 3 | DRAFT VERSION 2 | NOVEMBER 2012

**Strengthening Technical and Vocational Education and Training (STVET) Project
ADB Grant 0211-LAO**



**ADB Grant 0211-LAO
Strengthening Technical and Vocational Education and Training (STVET) Project**

LAO PDR

OCCUPATION AREA: **SHEET AND STRUCTURAL METAL WORKERS,
MOULDERS, WELDERS AND RELATED WORKERS
ISCO 721**

JOB TITLE: **WELDER
ISCO 7212**

COMPETENCY STANDARD: **WELDING SERVICE & REPAIR III**

NLVQF: **III**

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A Foreword

In order to ensure that the LAO PDR grows competitively over the coming years, we need to establish an ethos of excellence in everything that we do. This includes, particularly the Education & Employment sectors, as symbolized by Technical Vocational Education & Training (TVET).

Research has shown that countries without a functioning and effective TVET system will lose out in the competitiveness ratings, with a consequence negative impact on growth etc.

A.1 Project Title

Strengthen Technical Vocational Education & Training in LAO PDR

A.2 Project Donor & Number

ADB Grant No. 0211-LAO (SF)

B Purpose of this competency standard

The Purpose of the Competency Standard for the WELDING SERVICE AND REPAIR **Level III** is to provide a framework for Competency Based Training (CBT) Programmes resulting in Competent WELDERS to support the welding service and repair industry/sector in Lao PDR.

The WELDING SERVICE AND REPAIR **Level III** is defined in reference to the Prime Minister Decree Number 0036/PM published in 2011, the Ministry of Education and Sport Decree Number 4697/MoES11 published 9 December 2011, the Manual for Developing Competency Standards published December 2011 and the ASEAN Regional Qualification Framework in TVET.

C Competency Standard/ Qualification/ Job Description

This Competency, Standards/ Qualification of WELDING SERVICE AND REPAIR III provide a structured occupational outcome for domestic & commercial WELDERS.

JOB DESCRIPTION

This qualification covers the skills and knowledge in Basic, Common & Core Competencies required by the welding service and repair industry/sector for WELDERS to perform a range of tasks related to creating, servicing and/or repairing a product using specific welding methods. This capability requires an understanding of complex welding tools and equipment, combination processes and concepts of measurement. Hand skills play a role in this Qualification. . It is suitable for entry into the welding service and repair industry/sector at **NVQF Level III** in Lao PDR.

Person deemed competent in this qualification:

- has theoretical knowledge in WELDING

- has a range of well-developed skills on WELDING to repair and maintain
- can perform complicated fabrication work using complex/multi-function equipment
- work on jobs requiring minimal tolerance
- be responsible for the entrusted equipment
- solve routine work problems using basic methods, tools materials and information

JOB ROLES/EMPLOYMENT OUTCOMES

The Certificate **Level III** in WELDING SERVICE AND REPAIR is intended to prepare new employees or recognize and develop existing workers who are performing welding methods within the welding service and repair industry/sector. This creating, servicing and/or repairing a product using specific preparation, cutting, brazing and Qualification requires that learners qualify in complex integrated welding practice and theoretical knowledge during the manufacturing and assembling process as specified by Industry.

Employment outcomes targeted by this qualification is WELDER.

APPLICATION

The qualification is in line with CBT principles and is suitable for a Lao PDR Apprenticeship pathway

Where common/core units of competency are packaged to suit a particular industry sector or occupational outcome, Registered Training Organizations (RTOs) might issue, for example, a:

Certificate III in WELDING SERVICE AND REPAIR (specializing WELDING)

It should be noted that a qualification with a specialization does not change the title of the qualification

CAREER PATH INFORMATION

CAREER PATH INTO THE QUALIFICATION

This qualification may be accessed by direct entry. Credit will be granted towards this qualification to those who have completed Certificate II in WELDING SERVICE AND REPAIR and work experiences on that Certificate Level.

CAREER PATH FROM THE QUALIFICATION

Further training pathways from this qualification may lead to a relevant Diploma.

D Outline of this Competency Standard

This Competency Standard contains **Units of Competency** as detailed within. These **Units** form the basis for CBT Learning Programmes for WELDER. Each **Unit** contains the required **Elements of Competency**. Each **Unit** being able to stand alone when applied in a work situation.

Each **Unit** can be amended in content or structure to meet the evolving needs of the WELDERS. Changes and amendments to this Competency Standard will be made in line with the existing Quality Assurance Procedures as approved by the appropriate authority.

This Competency Standard is structured in line with the approved Manual for Developing Competency Standards, developed as a part of the STVET programme. For Quality Assurance purposes, each Unit is coded in line with the example below:

Code Example

Occupation	Job	Sub Sector	Level	Unit Type	Unit No.	Version No
Sheet and structural metal workers	Welder	n.a.	NLVQF	Core	Series No	
721	7212	0	3	3	018	01

Code example above displayed as:

721.7212.033.018.01

Each Competency Standard for a Job contains a mix of Units structured as follows:

Basic Units – cover a range of Occupations

Common Units – Common to jobs in the welding service and repair industry/sector

Core Units – Technical & Specific to this job

E BASIC UNITS OF COMPETENCY

UNIT 1 LEAD WORKPLACE COMMUNICATION

Unit Code	721.7212.031.001.01
Unit Descriptor	This unit covers the Skills, Knowledge and Attitudes required leading in the dissemination and discussion of ideas, information and issues in the workplace.

UNIT 1 Elements & Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA Italicized terms as elaborated in the Rang of Variables
1. Communicate information about workplace processes	1.1 Appropriate communication method is selected 1.2 Multiple operations involving several topics areas are communicated accordingly 1.3 Questions are used to gain extra information 1.4 Correct sources of information are identified 1.5 Information is selected and organized correctly 1.6 Verbal and written reporting is undertaken when required 1.7 Communication skills are maintained in all situations
2. Lead workplace discussions	2.1 Response to workplace issues are sought 2.2 Response to workplace issues are provided immediately 2.3 Constructive contributions are made to workplace discussions on such issues as production, quality and safety 2.4 Goals/objectives and action plan undertaken in the workplace are communicated
3. Identify and communicate issues arising in the workplace	3.1 Issues and problems are identified as they arise 3.2 Information regarding problems and issues are organized coherently to ensure clear and effective communication 3.3 Dialogue is initiated with appropriate personnel 3.4 Communication problems and issues are raised as they arise

UNIT 1 Range of Variables

VARIABLES	RANGE
1. Methods of communication	1.1 Non-verbal gestures 1.2 Verbal 1.3 Face to face 1.4 Two-way radio 1.5 Speaking to groups 1.6 Using telephone 1.7 Written 1.8 Internet

UNIT 1 Evidence Guide

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1 Dealt with a range of communication/information at one time 1.2 Made constructive contributions in workplace issues 1.3 Sought workplace issues effectively 1.4 Responded to workplace issues promptly 1.5 Presented information clearly and effectively written form 1.6 Used appropriate sources of information 1.7 Asked appropriate questions 1.8 Provided accurate information
2. Underpinning knowledge and attitudes	2.1 Organization requirements for written and electronic communication methods 2.2 Effective verbal communication methods
3. Underpinning skills	3.1 Organize information 3.2 Understand and convey intended meaning 3.3 Participate in variety of workplace discussions 3.4 Comply with organization requirements for the use of written and electronic communication methods
4. Resource implications	The following resources should be provided: 4.1 Workplace location or simulated work area 4.2 Variety of Information and instruction to the task 4.3 Communication tools

<p>5. Method of assessment</p>	<p>Competency in this Unit should be assessed through:</p> <p>5.1 Direct Observation</p> <p>5.2 Interview</p> <p><i>Evidence provided for competency determination will be Valid, Sufficient & Current</i></p>
<p>6. Context for assessment</p>	<p>6.1 Competency may be assessed on the job or simulated environment.</p> <p>6.2 Assessment shall be observed while task are being undertaken whether individually or in group</p> <p>6.3 Assessment must be undertaken in accordance with Lao PDR CBT assessment guidelines</p>

UNIT 2 LEAD SMALL TEAMS

Unit Code	721.7212.031.002.01
Unit Descriptor	This unit covers the Skills, Knowledge and Attitudes required leading small team in the workplace.

UNIT 2 Elements & Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA Italicized terms as elaborated in the Rang of Variables
1. Provide team leadership	1.1 Work requirements are identified and presented to team members 1.2 Reasons for instructions and requirements are communicated to team members 1.3 Team members' queries and concerns are recognized, discussed and dealt with
2. Assign responsibilities	2.1 Duties, and responsibilities are allocated having regard to the skills, knowledge and aptitude required to properly undertake the assigned task and according to company policy 2.2 Duties are allocated having regard to individual preference, domestic and personal considerations, whenever possible
3. Set performance expectations for team members	3.1 Performance expectations are established based on client needs and according to assignment requirements 3.2 Performance expectations are based on individual team members duties and area of responsibility 3.3 Performance expectations are discussed and disseminated to individual team members
4. Supervised team performance	4.1 Monitoring of performance takes place against defined performance criteria and/or assignment instructions and corrective action taken if required 4.2 Team members are provided with feedback , positive support and advice on strategies to overcome any deficiencies 4.3 Performance issues which cannot be rectified or addressed within the team are referenced to appropriate personnel according to employer policy 4.4 Team members are kept informed of any changes in the priority allocated to assignments or tasks which

	<p>might impact on client/customer needs and satisfaction</p> <p>4.5 Team operations are monitored to ensure that employer/client needs and requirements are met</p> <p>4.6 Follow-up communication is provided on all issues affecting the team</p> <p>4.7 All relevant documentation is completed in accordance with company procedures</p>
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UNIT 2 Range of Variables

VARIABLES	RANGE
1. Work requirements	<p>1.1 Client Profile</p> <p>1.2 Assignment instructions</p>
2. Team member's concerns	2.1 Roster/shift details
3. Monitor performance	<p>3.1 Formal process</p> <p>3.2 Informal process</p>
4. Feedback	<p>4.1 Formal process</p> <p>4.2 Informal process</p>
5. Performance issues	<p>5.1 Work output</p> <p>5.2 Work quality</p> <p>5.3 Team participation</p> <p>5.4 Compliance with workplace protocols</p> <p>5.5 Safety</p> <p>5.6 Customer service</p>

UNIT 2 Evidence Guide

1. Critical aspects of Competency	<p>Assessment requires evidence that the candidate:</p> <p>1.1 Maintained or improved individuals and/or team performance given a variety of possible scenario</p> <p>1.2 Assessed and monitored team and individual performance against set criteria</p> <p>1.3 Represented concerns of a team and individual to next level of management or appropriate specialist and to negotiate on their behalf</p> <p>1.4 Allocated duties and responsibilities, having regard to individual's knowledge, skills and aptitude and the</p>
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	<p>needs of the tasks to be performed</p> <p>1.5 Set and communicated performance expectations for a range of tasks and duties within the team and provided feedback to team members</p>
2. Underpinning knowledge and attitudes	<p>2.1 Company policies and procedures</p> <p>2.2 Relevant legal requirements</p> <p>2.3 How performance expectations are set</p> <p>2.4 Methods of Monitoring Performance</p> <p>2.5 Client expectations</p> <p>2.6 Team member's duties and responsibilities</p>
3. Underpinning skills	<p>3.1 Communication skills required for leading teams</p> <p>3.2 Informal performance counseling skills</p> <p>3.3 Team building skills</p> <p>3.4 Negotiating skills</p>
4. Resource implications	<p>The following resources should be provided:</p> <p>4.1 Relevant workplace location or simulated work area</p> <p>4.2 Materials relevant to the proposed activity or task</p>
5. Method of assessment	<p>Competency in this Unit should be assessed through:</p> <p>5.1 Direct observations of work activities of the individual member in relation to the work activities of the group</p> <p>5.2 Observation of simulation and/or role play involving the participation of individual member to the attainment of organizational goal</p> <p>5.3 Case studies and scenarios as a basis for discussion of issues and strategies in teamwork</p> <p><i>Evidence provided for competency determination will be Valid, Sufficient & Current</i></p>
6. Context for assessment	<p>6.1 Competency may be assessed on the job or simulated environment.</p> <p>6.2 Assessment shall be observed while task are being undertaken whether individually or in group</p> <p>6.3 Assessment must be undertaken in accordance with Lao PDR CBT assessment guidelines</p>

UNIT 3 PRACTICE NEGOTIATION SKILLS

Unit Code	721.7212. 031.003.01
Unit Descriptor	This Unit covers the Skills, Knowledge and Attitudes required collecting information in order to negotiate to a desired outcome and participate in the negotiation.

UNIT 3 Elements & Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA Italicized terms as elaborated in the Rang of Variables
1. Plan negotiations	1.1 Information on <i>preparing for negotiation</i> is identified and included in the plan 1.2 Information on creating <i>nonverbal environments</i> for positive negotiating is identified and included in the plan 1.3 Information on <i>active listening</i> is identified and included in the plan 1.4 Information on different <i>questioning techniques</i> is identified and included in the plan 1.5 Information is checked to ensure it is correct and up-to- date
2. Participate in negotiation	2.1 Criteria for successful outcomes are agreed upon by all parties 2.2 Desired outcome of all parties are considered 2.3 Appropriate language is used throughout the negotiation 2.4 A variety of questioning techniques are used 2.5 The issues and processes are documented and agreed upon by all parties 2.6 Possible solutions are discussed and their viability assessed 2.7 Areas for agreement are confirmed and recorded 2.8 Follow-up action is agreed upon by all parties

UNIT 3 Range of Variables

VARIABLES	RANGE
1. Preparing for negotiation	1.1 Background information on other parties to the negotiation

	<ul style="list-style-type: none"> 1.2 Good understanding of topic to be negotiated 1.3 Clear understanding of desired outcome/s 1.4 Personal attributes <ul style="list-style-type: none"> 1.4.1 Self-awareness 1.4.2 Self esteem 1.4.3 Objectivity 1.4.4 Empathy 1.4.5 respect for others 1.4.6 Interpersonal skills 1.4.7 listening/reflecting 1.4.8 Nonverbal communication 1.4.9 Assertiveness 1.4.10 behavior labeling 1.4.11 testing understanding 1.4.12 seeking information 1.4.13 self-disclosing 1.5 Analytic skills <ul style="list-style-type: none"> 1.5.1 Observing differences between content and process 1.5.2 Identifying bargaining information 1.5.3 Applying strategies to manage process 1.5.4 Applying steps in negotiating process 1.5.5 Strategies to manage conflict 1.5.6 Steps in negotiating process 1.5.7 Options within organization and externally for resolving conflict
2. Non-verbal environments	<ul style="list-style-type: none"> 2.1 Friendly reception 2.2 Warm and welcoming room 2.3 Refreshments offered 2.4 Lead in conversation before negotiation begins
3. Active listening	<ul style="list-style-type: none"> 3.1 Attentive 3.2 Don't interrupt 3.3 Good posture 3.4 Maintain eye contact 3.5 Reflective listening
4. Questioning techniques	<ul style="list-style-type: none"> 4.1 Direct 4.2 Indirect

	4.3 Open-ended
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UNIT 3 Evidence Guide

1. Critical aspects of Competency	<p>Assessment requires evidence that the candidate:</p> <p>1.1 Demonstrated sufficient knowledge of the factors influencing negotiation to achieve agreed outcome</p> <p>1.2 Participated in negotiation with at least one person to achieve an agreed outcome</p>
2. Underpinning knowledge and attitudes	<p>2.1 Codes of practice and guidelines for the organization</p> <p>2.2 Organizations policy and procedures for negotiations</p> <p>2.3 Decision making and conflict resolution strategies procedures</p> <p>2.4 Problem solving strategies on how to deal with unexpected questions and attitudes during negotiation</p> <p>2.5 Flexibility</p> <p>2.6 Empathy</p>
3. Underpinning skills	<p>3.1 Interpersonal skills to develop rapport with other parties</p> <p>3.2 Communication skills (verbal and listening)</p> <p>3.3 Observation skills</p> <p>3.4 Negotiation skills</p>
4. Resource implications	<p>The following resources should be provided:</p> <p>4.1 Room with facilities necessary for the negotiation process</p> <p>4.2 Human resources (negotiators)</p>
5. Method of assessment	<p>Competency in this Unit should be assessed through:</p> <p>5.1 Observation/demonstration and questioning</p> <p>5.2 Portfolio assessment</p> <p>5.3 Oral and written questioning</p> <p><i>Evidence provided for competency determination will be Valid, Sufficient & Current</i></p>
6. Context for assessment	<p>6.1 Competency should be assessed on the job or simulated environment.</p> <p>6.2 Assessment must be undertaken in accordance with Lao PDR CBT assessment guidelines</p>

UNIT 4 SOLVE PROBLEMS RELATED TO WORK ACTIVITIES

Unit Code	721.7212.031.004.01
Unit Descriptor	This unit covers the Skills Knowledge & Attitudes required to solve problems related to workplace activities

UNIT 4 Elements & Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA Italicized terms as elaborated in the Rang of Variables
1. Identify the problem	1.1 Variances are identified from normal operating parameters; and product quality 1.2 Extent, cause and nature are of the problem are defined through observation, investigation and analytical techniques 1.3 Problems are clearly stated and specified
2. Determine problem causes	2.1 Possible causes are identified based on experience and the use of problem solving tools / analytical techniques. 2.2 Possible cause statements are developed based on findings
3. Determine corrective action	3.1 All possible options are considered for resolution of the problem 3.2 Strengths and weaknesses of possible options are considered 3.3 Corrective actions are determined to resolve the problem and possible future causes 3.4 Action plans are developed identifying measurable objectives, resource needs and timelines in accordance with safety and operating procedures
4. Provide recommendation	4.1 Report on recommendations are prepared 4.2 Recommendations are presented to appropriate personnel 4.3 Recommendations are followed-up, if required

UNIT 4 Range of Variables

VARIABLES	RANGE
1. Analytical techniques	1.1 Brainstorming 1.2 Intuitions/Logic 1.3 Cause and effect diagrams 1.4 Pareto analysis 1.5 SWOT analysis 1.6 Gant chart, Pert CPM and graphs 1.7 Scatter grams
2. Problem	2.1 Non – routine process and quality problems 2.2 Equipment selection, availability and failure 2.3 Teamwork and work allocation problem 2.4 Safety and emergency situations and incidents
3. Action plans	3.1 Priority requirements 3.2 Measurable objectives 3.3 Resource requirements 3.4 Timelines 3.5 Co-ordination and feedback requirements 3.6 Safety requirements 3.7 Risk assessment 3.8 Environmental requirements

UNIT 4 Evidence Guide

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1 Identified the problem 1.2 Determined the fundamental causes of the problem 1.3 Determined the correct / preventive action 1.4 Provided recommendation to manager These aspects may be best assessed using a range of scenarios / case studies / what ifs as a stimulus with a walk through forming part of the response. These assessment activities should include a range of problems, including new, unusual and improbable situations that may have happened
2. Underpinning knowledge and attitudes	2.1 Competence includes a thorough knowledge and understanding of the process, normal operating parameters, and product quality to recognize non-

	<p>standard situations</p> <p>2.2 Competence to include the ability to apply and explain, sufficient for the identification of fundamental cause, determining the corrective action and provision of recommendations</p> <p>2.3 Relevant equipment and operational processes</p> <p>2.4 Enterprise goals, targets and measures</p> <p>2.5 Enterprise quality, OHS and environmental requirement</p> <p>2.6 Principles of decision making strategies and techniques</p> <p>2.7 Enterprise information systems and data collation</p> <p>2.8 Industry codes and standards</p>
3. Underpinning skills	<p>3.1 Using range of formal problem solving techniques</p> <p>3.2 Identifying and clarifying the nature of the problem</p> <p>3.3 Devising the best solution</p> <p>3.4 Evaluating the solution</p> <p>3.5 Implementation of a developed plan to rectify the problem</p>
4. Resource implications	<p>The following resources should be provided:</p> <p>4.1 Assessment will require access to an operating plant over an extended period of time, or a suitable method of gathering evidence of operating ability over a range of situations.</p> <p>4.2 A bank of scenarios / case studies / what ifs will be required</p> <p>4.3 A bank of questions which will be used to probe the reason behind the observable action</p> <p>4.4 Relevant workplace location or simulated work area</p> <p>4.5 Materials relevant to the proposed activity or task</p>
5. Method of assessment	<p>5.1 The unit should be assessed in a holistic manner as is practical and may be integrated with the assessment of other relevant units of competency.</p> <p>5.2 Assessment will occur over a range of situations, which will include disruptions to normal, smooth operation.</p> <p>5.3 Simulation should be based on the actual workplace and will include walk through of the relevant competency components.</p> <p>5.4 Case studies on solving problems in the workplace</p>

	<p>5.5 Observation</p> <p><i>Evidence provided for competency determination will be Valid, Sufficient & Current</i></p>
<p>6. Context for assessment</p>	<p>6.1 Competency should be assessed at the workplace or simulated environment.</p> <p>6.2 Assessment shall be observed with relevant teamwork or operation units</p> <p>6.3 Assessment must be undertaken in accordance with Lao PDR CBT assessment guidelines</p>

UNIT 5 USE MATHEMATICAL CONCEPTS & THEORIES

Unit Code	721.7212.021.005.01
Unit Descriptor	This Unit covers the Skills, Knowledge and Attitudes required in the application of mathematical concepts and techniques.

UNIT 5 Elements & Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA Italicized terms as elaborated in the Rang of Variables
1. Identify mathematical tools and techniques to solve problem	1.1 Problem areas are identified based on given condition 1.2 Mathematical techniques are selected based on the given problem
2. Apply mathematical procedure/solution	2.1 Mathematical techniques are applied based on the problem identified 2.2 Mathematical computations are performed to the level of accuracy required for the problem 2.3 Results of mathematical computation is determined and verified based on job requirements
3. Analyze results	3.1 Result of application is reviewed based on expected and required specifications and outcome 3.2 Appropriate action is applied in case of error

UNIT 5 Range of Variables

VARIABLES	RANGE
1. Mathematical techniques	Should be included, but are not limited to: 1.1 Four fundamental operations 1.2 Measurements 1.3 Use/Conversion of units of measurements 1.4 Use of standard formulas
2. Appropriate action	2.1 Review in the use of mathematical techniques (e.g. recalculation, re-modeling) 2.2 Report error to immediate superior for proper action

UNIT 5 Evidence Guide

1. Critical aspects of Competency	<p>Assessment requires evidence that the candidate:</p> <p>1.1 Identified, applied and reviewed the use of mathematical concepts and techniques to workplace problems</p>
2. Underpinning knowledge and attitudes	<p>2.1 Fundamental operation (addition, subtraction, division, multiplication)</p> <p>2.2 Measurement system</p> <p>2.3 Precision and accuracy</p> <p>2.4 Basic measuring tools/devices</p>
3. Underpinning skills	<p>3.1 Applying mathematical computations</p> <p>3.2 Using calculator</p> <p>3.3 Using different measuring tools</p>
4. Resource implications	<p>The following resources should be provided:</p> <p>4.1 Workplace location or simulated work area</p> <p>4.2 Calculator</p> <p>4.3 Basic measuring tools</p> <p>4.4 Case Problems</p>
5. Method of assessment	<p>Competency in this Unit should be assessed through:</p> <p>5.1 Assessment must satisfy the endorsed Lao competency based assessment guidelines of this Training Package</p> <p>5.2 Third party report</p> <p>5.3 Interview/ oral questioning</p> <p>5.4 Demonstration on simulated situation</p> <p>5.5 Written/Oral examination</p> <p><i>Evidence provided for competency determination will be Valid, Sufficient & Current</i></p>
6. Context for assessment	<p>6.1 Competency should be assessed in the workplace or simulated environment.</p> <p>6.2 Assessment must be undertaken in accordance with Lao PDR CBT assessment guidelines</p>

UNIT 6 USE RELEVANT TECHNOLOGIES

Unit Code	721.7212.021.006.01
Unit Descriptor	This Unit covers the Skills, Knowledge and Attitudes required in selecting, sourcing and applying appropriate technologies in the workplace.

UNIT 6 Elements & Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA Italicized terms as elaborated in the Rang of Variables
1. Study/select appropriate technology	1.1 Usage of different technologies is determined based on job requirements 1.2 Selected Appropriate technology is based on work requirements
2. Apply relevant technology	2.1 Relevant technology is effectively used in carrying out function 2.2 Applicable software and hardware are used as per task requirement 2.3 Management concepts are observed and practiced as per established industry practices
3. Maintain/enhance relevant technology	3.1 Maintenance of technology is applied in accordance with the industry standard operating procedure, manufacturer's operating guidelines and occupational health and safety procedure 3.2 Updating of technology is maintained in accordance with job requirement 3.3 Technology failure/ defect is immediately reported in line with standard operating procedure

UNIT 6 Range of Variables

VARIABLES	RANGE
1. Technology	Should be included, but not limited to: 1.1 Office technology 1.2 Industrial technology 1.3 System technology 1.4 Information technology 1.5 Training technology

2. Management concepts	<p>Should be included, but not limited to:</p> <p>2.1 Real Time Management</p> <p>2.2 Total Quality Management</p> <p>2.3 Other management/productivity tools</p>
3. Industry standard operating procedure	<p>3.1 Written guidelines relative to the usage of office technology/equipment</p> <p>3.2 Verbal advise/instruction from the co-worker</p>
4. Manufacturer's operating guidelines/instructions	<p>Manuals and Information may include:</p> <p>4.1 Verbal or written and graphical instructions, signage, work schedules/plans/specifications</p> <p>4.2 Safe work procedures related to task</p> <p>4.3 Regulatory legislative requirements pertaining to the automotive industry including Lao Design Rules</p> <p>4.4 Repair-, specification data-, periodic service maintenance manual/handbook issued by company/manufacturer/component supplier</p> <p>4.5 Written instruction/manuals of specific technology/equipment</p> <p>4.6 General instruction manual</p> <p>4.7 Verbal advise from manufacturer relative to the operation of equipment</p>
5. Occupational health and safety procedure	<p>OHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures, and may include:</p> <p>5.1 To conduct of operational risk assessment and treatments associated with Vehicular movements, hazardous substances, Electrical safety manual, lifting and shifting working in proximity to others a site visitors</p> <p>5.2 Use of personal protective equipment that include prescribed under legislation regulations codes of practice and workplace policies and practice</p>
6. Appropriate action	<p>6.1 Implementing preventive maintenance schedule</p> <p>6.2 Coordinating with manufacturer's technician</p>

UNIT 6 Evidence Guide

1. Critical aspects of Competency	<p>Assessment requires evidence that the candidate:</p> <p>1.1 Studied and selected appropriate technology consistent with work requirements</p> <p>1.2 Applied relevant technology</p> <p>1.3 Maintained and enhanced operative ability of relevant technology</p>
2. Underpinning knowledge and attitudes	<p>2.1 Awareness on technology and its function</p> <p>2.2 Repair and maintenance procedure</p> <p>2.3 Operating instructions</p> <p>2.4 Applicable software</p> <p>2.5 Communication techniques</p> <p>2.6 Health and safety procedure</p> <p>2.7 Company policy in relation to relevant technology</p> <p>2.8 Different management concepts</p> <p>2.9 Technology adaptability</p>
3. Underpinning skills	<p>3.1 Relevant technology application/implementation</p> <p>3.2 Basic communication skills</p> <p>3.3 Software applications skills</p> <p>3.4 Basic troubleshooting skills</p>
4. Resource implications	<p>The following resources should be provided:</p> <p>4.1 Workplace location or simulated work area</p> <p>4.2 Relevant technology</p> <p>4.3 Interview and demonstration questionnaires</p> <p>4.4 Assessment packages</p>
5. Method of assessment	<p>Competency in this Unit should be assessed through:</p> <p>5.1 Interview/ oral questioning</p> <p>5.2 Demonstration actual or simulated situation</p> <p>5.3 Authenticated portfolio (related certificates of training/seminar)</p> <p><i>Evidence provided for competency determination will be Valid, Sufficient & Current</i></p>
6. Context for assessment	<p>6.1 Competency should be assessed in the workplace or simulated environment.</p> <p>6.2 Assessment must be undertaken in accordance with Lao PDR CBT assessment guidelines</p>

UNIT 7 APPLY GENDER AND SOCIAL EQUITY PRINCIPLES AND POLICIES

Unit Code	723.7231.021.007.01
Unit Descriptor	This unit covers the knowledge, skills and attitudes to apply principles and policies on gender and social equity contributing to positive and productive work environment. This deals with complying with gender and social equity guidelines in the workplace; promoting gender and social equity in the workplace; and recognizing and preventing gender abuse and other forms of social inequities.

UNIT 7 Elements & Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA Italicized terms as elaborated in the Rang of Variables
1. Follow guidelines or rules of conduct related to gender and social equity in the workplace	<p>1.1 Workplace practices and work instructions relating to interacting with different social groups based on gender, ethnicity and disability are recognized and followed, and clarification is sought where necessary.</p> <p>1.2 Relevant legislation, codes and national standards that impact on gender and social equity are recognized and followed.</p> <p>1.3 Introduction of and amendments to guidelines in the work conduct related to gender and social fairness practices are responded to positively and promptly in accordance with organizational requirements.</p>
2. Contribute to improve workplace guidelines in promoting gender and social equity	<p>2.1 Suggestions are made to designated personnel on how to improve social interaction and communication in the workplace to better promote gender and social equity</p> <p>2.2 Information is gathered and improvements are suggested to help improve workplace guidelines and policies in promoting observing gender and social fairness.</p> <p>2.3 Gender and social equity issues in the workplace practices are discussed in the workplace with colleagues and designated personnel.</p> <p>2.4 Contributions to the review of workplace guidelines and policies gender and social equity guidelines and policies are made within limits of responsibility</p>
3. Recognize and report suspected cases of	3.1 Signs and manifestations of gender and social inequities and its impact in the workplace are

gender and other forms of social inequity	<p>recognized.</p> <p>3.2 Information about or observations of a suspected problem related to gender and social inequity are reported to supervisors and appropriate authorities.</p> <p>3.3 Location and extent of suspected gender and social inequities is accurately recorded.</p> <p>3.4 Reports on the effect of gender and social inequities are completed according to organizational guidelines.</p>
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UNIT 7 Range of Variables

VARIABLES	RANGE
1. Workplace practices and work instructions	<p>1.1 Social diversity awareness, recognition and analysis in the workplace</p> <p>1.2 Use of gender fair and socially inclusive language in dealing with co-workers and students</p> <p>1.3 Sexual harassment and bullying incident recording and reporting procedures</p> <p>1.4 Verbal instructions from persons with responsibility related to gender and social equity awareness and sensitivity</p>
2. Legislation, codes and national standards	<p>2.1 Code of Conduct on sexual harassment in TVET institutions under MoES</p> <p>2.2 National Strategy for the Advancement of Women, 2005-2010 (includes goals and programmes to promote Lao women's education, skill levels, income generating opportunities, among others)</p> <p>2.3 Lao PDR Law on Development and Protection of Women (Among others, aims to promote women's knowledge and competency, revolutionary morals and virtues, gender equality; seeks to eliminate all forms of discrimination against women; creates enabling conditions for women's participation; and for women to be equal force in national protection and development)</p> <p>2.4 Labor Law of Lao PDR, 1994 (Articles 2, 39 & 35)</p> <p>2.5 Constitution of Lao PDR, 2003 (Articles 22, 24 & 27, statement on women of all ethnic groups should receive equal treatment in terms of legal rights, economic and social opportunities)</p> <p>2.6 National obligations to international human rights conventions (Convention on the Elimination of all Forms of Discrimination against Women (CEDAW), 1981; Convention on the Rights of the Child (CRC),</p>

	1990
3. Suggestions	<p>3.1 Be sensitive in terms of gender, ethnicity and disability in verbal and non-verbal communication</p> <p>3.2 Stop the repetition of sexist and discriminatory sex jokes</p> <p>3.3 Create and share jokes that are not told at the expense of different social groups</p> <p>3.4 Recognize the rights of different social groups i.e. women, different ethnic groups, the disabled to equal access to training and skills development, respectful treatment, etc.</p>
4. Designated personnel	<p>4.1 School Administrator</p> <p>4.2 Head teacher</p> <p>4.3 Teacher and school staff designated as gender and social equity focal point</p>
5. Workplace guidelines and policies in observing gender and social fairness	<p>5.1 Guiding workplace conduct against committing and reporting sexual harassment</p> <p>5.2 Using language that is sensitive in terms of gender, ethnicity and disability</p> <p>5.3 Information on personnel policies that are aligned with national and official policies and guidelines that uphold the rights of women, ethnic groups and the disabled</p> <p>5.4 Provision of separate and secure accommodations, toilets wash and resting areas for women, ethnic groups and disabled people</p> <p>5.5 The designation of a gender focal point among teachers, non-teaching staff and among student population</p>
6. Gender and social equity issues	<p>6.1 Sexual harassment</p> <p>6.2 Bullying</p> <p>6.3 Voyeurism</p> <p>6.4 Different forms of gender-based violence</p> <p>6.5 Inappropriate and discriminatory language</p> <p>6.6 Sex jokes that are discriminatory against women, ethnic groups, disabled people</p> <p>6.7 Discrimination in the workplace</p>
7. Signs or manifestations	<p>7.1 Sub-standard performance, social withdrawal of affected group or individual</p> <p>7.2 Lack of motivation to advance or excel</p>

	7.3 Absenteeism, intention to resign without reason 7.4 Display of fear, nervous and seemingly irrational behavior of affected group in the presence of perpetrator
8. Reported	8.1 Verbally (face-to-face or through communication equipment) 8.2 In writing (memo, notes, faxes, email or electronic messages) 8.3 Witness or third party accounts
9. Recorded	9.1 Incident report 9.2 Public petitions 9.3 CCTV in the workplace
10. Designated personnel	10.1 School Administrator 10.2 Head teacher 10.3 Teacher and school staff designated as gender and social equity focal point

UNIT 7 Evidence Guide

1. Critical aspects of Competency	1.1 Demonstrated knowledge of workplace practices and work instructions 1.2 Described relevant legislations, codes and national standards related to gender and social equity issues in the workplace 1.3 Followed workplace practices, policies and guidelines related to gender and social equity 1.4 Contributed to improve workplace guidelines in promoting gender and social equity 1.5 Recognized and reported on suspected cases of gender and other forms of social inequity 1.6 Reported, recorded or became aware of the need to report and document lack of compliance with guidelines and policies on gender and social fairness in the workplace
2. Underpinning knowledge and attitudes	2.1 Relevant legislation from all levels of government on gender and other social equity issues involving ethnic groups and disability 2.2 Relevant gender and social equity official legislation, policies and workplace practices and procedures 2.3 Good practice approaches relevant to work area particularly in regard to observance of and compliance

	<p>with guidelines and policies that uphold and promote gender and social equity.</p> <p>2.4 Gender and other social equity issues, especially in regard to sexual harassment and gender and other discrimination in the workplace</p> <p>2.5 Gender issues in TVET areas traditionally not associated with women</p> <p>2.6 General work place practices and their potential impact on the gender and other dimensions of social equity</p>
3. Underpinning skills	<p>3.1 Discuss and explain gender and other social equity issues in TVET</p> <p>3.2 Communicate with co-workers and students in an inclusive manner that respects the rights of the different groups that constitute the workplace and the classroom</p> <p>3.3 Recognize signs and manifestations of sexual harassment and other forms of gender-based violence in the workplace and in the classroom</p> <p>3.4 Follow workplace directions and instructions</p> <p>3.5 Ability to report and document cases of sexual harassment and other forms of gender-based violence and violence directed at other disadvantaged groups</p>
4. Resource implications	<p>4.1 Basic sensitization workshop on gender and other social equity issues</p> <p>4.2 Legislation, policies, procedures, protocols and local ordinances relating to gender and social equity</p> <p>4.3 Case studies and scenarios relating to the reporting and handling of cases of sexual harassment and other forms of gender-based violence</p>
5. Method of assessment	<p>5.1 Competency may be assessing through:</p> <p>5.2 Written or oral Examination</p> <p>5.3 Certificate of attendance in basic sensitization workshop on gender and other social equity issues</p> <p><i>Evidence provided for competency determination will be Valid, Sufficient & Current</i></p>
6. Context for assessment	<p>6.1 Competency should be assessed on workplace or simulated environment.</p> <p>6.2 Assessment must be undertaken in accordance with Lao PDR CBT assessment guidelines</p>

F COMMON UNITS OF COMPETENCY

UNIT 8 OBSERV POCEDURES, SPECIFICATIOIS & MANUALS OF INSTRUCTION

Unit Code	723.7231.122.001.01
Unit Descriptor	This unit covers the Skills, Knowledge and Attitudes required in identifying, interpreting, applying services to specifications and manuals and storing manuals.

UNIT 8 Elements & Performance Criteria

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

UNIT 8 Range of Variables

VARIABLES	RANGE
1. Manuals and Information	1.1 Regulatory legislative requirements pertaining to the automotive industry including Lao Design Rules 1.2 Repair manual/handbook issued by company/manufacturer/component supplier 1.3 Specification data/manual/handbook issued by company/manufacturer/component supplier 1.4 Periodic Service Maintenance Data manual/handbook

	<p>issued by company/manufacturer/component supplier</p> <p>1.5 Tools, workshop-, test equipment and OHS user manual and service guide issued by company/manufacturer/component supplier</p>
2. Applications	<p>Manuals used for System/components may be fitted to:</p> <p>2.1 Light vehicles</p> <p>2.2 Agro-Machinery</p> <p>2.3 Outdoor power equipment</p> <p>2.4 Marine craft</p> <p>2.5 Plant</p>
3. Company/ workshop standard operating procedures	<p>Manuals and Information used for Company/workshop standard operating procedures include:</p> <p>3.1 Written instructions issued by authorized personal</p> <p>3.2 Job order slip</p> <p>3.3 Spare parts ordering form</p>

UNIT 8 Evidence Guide

1. Critical aspects of Competency	<p>Assessment requires evidence that the candidate:</p> <p>1.1 Listed materials and tools according to quantity and job requirements</p> <p>1.2 Requested materials and tools according to the list prepared and as per company standard operating procedures</p> <p>1.3 Inspected issued materials and tools as per quantity and job specifications</p> <p>1.4 Tools provided with appropriate safety devices</p>
2. Underpinning knowledge and attitudes	<p>2.1 Types and uses of construction materials and tools</p> <p>2.2 Different forms</p> <p>2.3 Requisition procedures</p>
3. Underpinning skills	<p>3.1 Preparing materials and tools</p> <p>3.2 Proper handling of tools and equipment</p> <p>3.3 Following instructions</p>
4. Resource implications	<p>The following resources should be provided:</p> <p>4.1 Workplace location</p> <p>4.2 Materials relevant to the unit of competency</p> <p>4.3 Technical data/manual/handbook and specifications</p>

	relevant to the activities
5. Method of assessment	<p>Competency in this Unit may be assessed through:</p> <p>5.1 Direct observation and oral questioning</p> <p>5.2 <i>Evidence provided for competency determination will be Valid, Sufficient & Current</i></p>
6. Context for assessment	<p>6.1 Competency may be assessed on the job or simulated environment.</p> <p>6.2 Assessment must be undertaken in accordance with Lao PDR CBT assessment guidelines</p>

UNIT 9 INTERPRET TECHNICAL DRAWING & PLANS

Unit Code	723.7231.122.002.01
Unit Descriptor	This unit covers the Skills, Knowledge and Attitudes required in analyzing and interpreting symbols, data and work plan based on the required performance standards.

UNIT 9 Elements & Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA Italicized terms as elaborated in the Rang of Variables
1. Analyze signs, symbols and data	1.1 Technical plans are obtained according to job requirements 1.2 Signs, symbols and data are identified according to job specifications 1.3 Signs symbols and data are determined according to classification or as appropriate in drawing
2. Interpret technical drawings and plans	2.1 Necessary tools, materials and equipment are identified according to the drawing & plan 2.2 Components, assemblies or objects are recognized as required 2.3 Dimensions are identified as appropriate to the plan 2.4 Specification details are matched with existing/available resources and in line with job requirements 2.5 Free hand sketches produced in line with needs

UNIT 9 Range of Variables

VARIABLES	RANGE
1. Technical Drawing/ Plans	Technical Drawing/Plans including but not limited to: 1.1 Welding plans 1.2 Welding Procedures Specifications (WPS) 1.3 Auto mechanic plans 1.4 Agro-Machinery plans 1.5 Motorbike plans 1.6 Electrical wiring plans 1.7 OHS work plans 1.8 Plans, schematic diagrams in

	Company/manufacturer/component supplier repair, specification data and Periodic Service Maintenance Data manual/handbook
2. Applications	Including but not limited to: 2.1 Argo Machinery Mechanic and Repair 2.2 Auto Mechanic and Repair 2.3 Motorbike Mechanic and Repair 2.4 Welding
3. Drawing	3.1 Drawing symbols 3.2 Alphabet of lines 3.3 Orthographic views 3.3.1 Front view 3.3.2 Right side view/left side view 3.3.3 Top view 3.3.4 Pictorial 3.4 Schematic diagram 3.5 Electrical drawings 3.6 Structural drawings 3.7 Welding drawing 3.8 Welding symbols
4. Tools and materials	Including but not limited to: 4.1 Compass 4.2 Divider 4.3 Rulers 4.4 Triangles 4.5 Drawing tables 4.6 Computer

UNIT 9 Evidence Guide

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1 Identified and determined signs, symbols and data according to work plan, job requirements and classifications 1.2 Identified tools and equipment in accordance with job requirements 1.3 Listed supplies and materials according to blueprint specifications
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	<p>1.4 Drawn work plan following specifications</p> <p>1.5 Demonstrated ability to determine job specifications based on working / technical drawing</p>
2. Underpinning knowledge and attitudes	<p>TRADE MATHEMATICS</p> <p>2.1 Linear measurement</p> <p>2.2 Dimension</p> <p>2.3 Unit conversion</p> <p>BLUEPRINT READING AND PLAN SPECIFICATION</p> <p>2.4 Electrical, mechanical plan, symbols and abbreviations</p> <p>2.5 Drawing standard symbols</p> <p>TRADE THEORY</p> <p>2.6 Basic technical drawing</p> <p>2.7 Types technical plans</p> <p>2.8 Various types of drawings</p> <p>2.9 Notes and specifications</p>
3. Underpinning skills	<p>3.1 Interpreting drawing/orthographic drawing</p> <p>3.2 Interpreting technical plans</p> <p>3.3 Matching specification details with existing resources</p> <p>3.4 Following instructions</p> <p>3.5 Handling of drawing instruments</p>
4. Resource implications	<p>The following resources should be provided:</p> <p>4.1 Workplace location or simulated work area</p> <p>4.2 Drawings and specification relevant to task</p> <p>4.3 Materials and instrument relevant to proposed activity</p>
5. Method of assessment	<p>Competency in this Unit should be assessed through:</p> <p>5.1 Direct Observation</p> <p>5.2 Questions/Interview</p> <p>5.3 Written test related to underpinning knowledge</p> <p><i>Evidence provided for competency determination will be Valid, Sufficient & Current</i></p>
6. Context for assessment	<p>6.1 Competency assessment may occur in the workplace or in any appropriate simulated environment</p> <p>6.2 Assessment shall be observed while task are being undertaken whether individually or in group</p> <p>6.3 Assessment must be undertaken in accordance with Lao PDR CBT assessment guidelines</p>

UNIT 10 PERFORM MENSURATION AND CALCULATION

Unit Code	723.7231.122.003.01
Unit Descriptor	This unit covers the Skills, Knowledge and Attitudes required in identifying and measuring objects based on the required performance standards.

UNIT 10 Elements & Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA Italicized terms as elaborated in the Rang of Variables
1. Select measuring instruments	<p>1.1 Object or component to be measured is identified, classified and interpreted according to the appropriate regular <i>geometric shape</i> and job requirements</p> <p>1.2 Correct specifications are obtained from relevant sources</p> <p>1.3 Appropriate measuring tools/ instruments are selected/identified as per object to be measured or job requirements</p>
2. Carry out measurements and calculations	<p>2.1 Accurate <i>measurements</i> are obtained according to job requirements</p> <p>2.2 <i>Calculation</i> needed to complete work tasks are performed using the four basic process of addition (+), subtraction (-), multiplication (x) and division (/) including but not limited to: trigonometric functions, algebraic computations</p> <p>2.3 Calculations involving fractions, percentages and mixed numbers are used to complete workplace tasks</p> <p>2.4 Numerical computation is self-checked and corrected for accuracy</p> <p>2.5 Instruments are read to the limit of accuracy of the tool</p> <p>2.6 Systems of measurement identified and converted according to job requirements/ISO</p> <p>2.7 Object or component are measured according to job requirements</p>

UNIT 10 Range of Variables

VARIABLES	RANGE
1. Geometric shape	Including but is not limited to: <ul style="list-style-type: none"> 1.1 Round 1.2 Square 1.3 Rectangular 1.4 Triangle 1.5 Sphere 1.6 Conical
2. Measuring instruments	Including but not limited to: <ul style="list-style-type: none"> 2.1 Micrometer (In-out, depth) 2.2 Vernier caliper (out, inside) 2.3 Dial gauge 2.4 Plastic gauge 2.5 Straight edge 2.6 Thickness gauge 2.7 Torque gauge 2.8 Telescopic gauge 2.9 Try-square 2.10 Protractor 2.11 Combination gauge 2.12 Steel rule 2.13 Voltmeter 2.14 Ammeter 2.15 Ohmmeter 2.16 Gauges (pressure and vacuum) 2.17 Thermometers
3. Measurements and calculations	Kinds of part mensuration include: <ul style="list-style-type: none"> 3.1 Linear 3.2 Volume 3.3 Area 3.4 Wattage 3.5 Voltage 3.6 Resistance 3.7 Amperage 3.8 Frequency

	<ul style="list-style-type: none"> 3.9 Impedance 3.10 Displacement 3.11 Inside diameter 3.12 Outside diameter 3.13 Circumference 3.14 Length 3.15 Thickness 3.16 Taper 3.17 Out of roundness 3.18 End play/thrust clearance
4. Applications	<p>Mensuration including but not limited to:</p> <ul style="list-style-type: none"> 4.1 Argo Machinery Mechanic and Repair 4.2 Auto Mechanic and Repair 4.3 Motorbike Mechanic and Repair 4.4 Welding

UNIT 10 Evidence Guide

1. Critical aspects of Competency	<p>Assessment requires that the candidate:</p> <ul style="list-style-type: none"> 1.1 Selected and prepared appropriate measuring instruments in accordance with job requirements 1.2 Performed measurements and calculations according to job requirements/ ISO
2. Underpinning knowledge and attitudes	<p>TRADE MATHEMATICS / MENSURATION</p> <ul style="list-style-type: none"> 2.1 Four fundamental operation 2.2 Linear measurement 2.3 Dimensions 2.4 Unit conversion 2.5 Ratio and proportion 2.6 Trigonometric functions 2.7 Algebraic equations
3. Underpinning skills	<ul style="list-style-type: none"> 3.1 Performing calculation by addition, subtraction, multiplication and division; trigonometric functions and algebraic equations 3.2 Visualizing objects and shapes 3.3 Interpreting formulas for volume, areas, perimeters of plane and geometric figures 3.4 Proper handling of measuring instruments

4. Resource implications	<p>The following resources should be provided:</p> <p>4.1 Workplace location or simulated work area</p> <p>4.2 Problems to solve</p> <p>4.3 Measuring instrument appropriate to carry out tasks</p> <p>4.4 Instructional materials relevant to the propose activity</p> <p>4.5 Assessment of underpinning knowledge and practical skills may be combined</p>
5. Method of assessment	<p>Competency should be assessed through:</p> <p>5.1 Direct Observation on actual workplace</p> <p>5.2 Written test/questioning to underpinning knowledge</p> <p><i>Evidence provided for competency determination will be Valid, Sufficient & Current</i></p>
6. Context for assessment	<p>6.1 Competency may be assessed on the job or simulated environment.</p> <p>6.2 Assessment shall be observed while task are being undertaken whether individually or in group</p> <p>6.3 Assessment must be undertaken in accordance with Lao PDR CBT assessment guidelines</p>

UNIT 11 APPLY OCCUPATIONAL HEALTHS & SAFETY REQUIERMENTS

Unit Code	723.7231.122.004.01
Unit Descriptor	This unit of Competency covers the Skills, Knowledge and Attitudes for Occupational Health & Safety (OHS) within any sector of the automotive industry.

UNIT 11 Elements & Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA Italicized terms as elaborated in the Rang of Variables
1. Identify & assess risks	<p>1.1 Hazards in the work area are identified, assessed and reported to designated personnel.</p> <p>1.2 Safety risks in the work area are identified, assessed and reported to designated personnel.</p> <p>1.3 Safe work practices, duty of care requirements and safe work instructions are followed for controlling risks.</p> <p>1.4 OHS, hazard, accident or incident reports are contributed to according to workplace procedures and National OHS legislation and relevant information</p>
2. Identify hazardous materials & other hazards	<p>2.1 Hazardous materials on a work site are correctly identified and, if appropriate, handled and used according to company and legislated procedures.</p> <p>2.2 Measures for controlling risks and construction hazards are applied effectively and immediately.</p> <p>2.3 Hazardous materials that have safety implications for self and other workers are secured immediately they are identified, using appropriate signs and symbols.</p>
3. Plan & prepare for safe work practices	<p>3.1 Correct personal protective equipment and clothing for each area of automotive work are identified, worn, correctly fitted, used and stored according to enterprise procedures.</p> <p>3.2 Selection of tools, equipment and materials, and organization of tasks are performed in conjunction with other personnel on site and in accordance with enterprise procedures.</p> <p>3.3 Required barricades and signage are determined and erected at the appropriate site location.</p> <p>3.4 Material safety data sheets (MSDS), and job safety analysis (JSA) and safe work method statements</p>

	relevant to the work to be carried out are identified and applied
4. Apply safe work practices	<p>4.1 Tasks are performed in a manner that is safe for operators, other personnel and the general community in accordance with legislative requirements, and enterprise policies and procedures.</p> <p>4.2 Plant and equipment guards are used in accordance with manufacturer specifications, work site regulations & standards.</p> <p>4.3 Procedures and relevant authorities for reporting hazards, incidents and injuries are used.</p> <p>4.4 Work site safety signs and symbols are identified and followed.</p> <p>4.5 Work site area is cleared and maintained to prevent and protect self and others from incidents and accidents and to meet environmental requirements</p>
5. Follow emergency procedures	<p>5.1 Designated personnel are identified in the event of an emergency for communication purposes.</p> <p>5.2 Safe workplace procedures for dealing with accidents, various types of fire and other emergencies are followed, including identification or use, if appropriate, of fire equipment within scope of responsibilities.</p> <p>5.3 Emergency response and evacuation procedures are known, practiced and carried out effectively when required.</p> <p>5.4 Emergency first aid treatment of minor injuries is carried out correctly and details of any treatment administered are reported accurately to designated personnel as soon as possible</p>

UNIT 11 Range of Variables

VARIABLES	RANGE
1. Hazards	<p>Hazards include but are not limited to;-</p> <p>1.1 Chemical spills</p> <p>1.2 Work in confined spaces</p> <p>1.3 Trenches, excavations, workshop pit</p> <p>1.4 Falling objects</p> <p>1.5 Gasses, fires</p> <p>1.6 Hazardous materials</p> <p>1.7 Extreme temperatures</p>

	<ul style="list-style-type: none"> 1.8 Infectious diseases 1.9 Handling & moving equipment 1.10 Overhanging, protruding, sharp objects 1.11 Noise, dust, vapors 1.12 Uncontrolled site traffic 1.13 Working at heights
2. Designated persons	<ul style="list-style-type: none"> 2.1 Safety officers 2.2 Managers, supervisors 2.3 Materials handling licensed persons
3. Safe work practices	<ul style="list-style-type: none"> 3.1 Observing OHS practices 3.2 Risk assessment & emergency procedures 3.3 Use of fire-fighting equipment
4. Duty of care requirements	<ul style="list-style-type: none"> 4.1 Protect others from harm 4.2 National OHS regulations
5. Incidents	<ul style="list-style-type: none"> 5.1 Accidents resulting in personal injury, damage to property 5.2 Events on site that require assessment and action
6. OHS legislation, regulations and codes	<ul style="list-style-type: none"> 6.1 Current National OHS regulations 6.2 Current Provincial OHS regulations 6.3 Current enterprise safety policies and procedures 6.4 Current Company/manufacturer/component supplier OHS manual/handbook/user guide requirements
7. Information, signs & symbols	<ul style="list-style-type: none"> 7.1 Visual displayed symbols, tags, signs, instructions 7.2 Event reporting documents 7.3 Safety meeting records
8. Hazardous materials	<ul style="list-style-type: none"> 8.1 Petrol, diesel, gas fuel 8.2 Exhaust gas 8.3 Welding gas 8.4 Oil 8.5 Color 8.6 Cleaning chemicals, solvents 8.7 Glues 8.8 Asbestos
9. Risk control measures	<ul style="list-style-type: none"> 9.1 Elimination, substitution, isolation 9.2 Management control

	9.3 Personal Protective Equipment
10. Personal Protective Equipment (PPE)	Including but limited to: 10.1 Aprons, arm guards, caps, dust masks, respirators, ear muffs, ear plugs, gloves, hard hats, reflective vests, jackets, overalls, safety glasses & goggles, steel capped boots, UV protective clothing & sunscreen
11. Tools, equipment and materials	Including but not limited to: 11.1 Fire-fighting equipment 11.2 Breathing apparatus 11.3 First aid kit 11.4 Ladders & work platforms 11.5 PPE
12. Emergency procedures	Including but not limited to: 12.1 Contact numbers, names and locations 12.2 Procedures for local emergency services

UNIT 11 Evidence Guide

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1 Locate, interpret & apply relevant information, standards & specifications 1.2 Comply with a safety site plan & National & organizational OHS policy/procedures. 1.3 Implement required safety actions relevant to a range of situations & in line with OHS policy and procedures
2. Underpinning knowledge and attitudes	2.1 Basic first aid procedures 2.2 OHS and Construction Terminology 2.3 Knowledge of OHS communication & visual display methods including signage 2.4 Emergency response & evacuation procedures
3. Underpinning skills	3.1 Recognize & respond effectively to a range of hazardous situations in the required manner 3.2 Deal with hazardous situations as part of a team 3.3 Communicate & report hazards & risks using a range of technologies suitable to the work environment 3.4 Identify & report faults in tools, equipment and facilities. 3.5 Current OHS legislation & required safety clothing

	<p>&equipment</p> <p>3.6 Safe use of construction tools, materials & equipment</p>
4. Resource implications	<p>The following resources should be provided:</p> <p>4.1 Induction procedures</p> <p>4.2 Realistic or simulated tasks covering mandatory OHS requirements</p> <p>4.3 Relevant specifications & work instructions</p> <p>4.4 Tools & equipment appropriate to applying safe work practices</p> <p>4.5 Support materials appropriate to activity</p> <p>4.6 Workplace instructions relating to safe work practices</p> <p>4.7 Material safety data sheets</p> <p>4.8 Research resources</p>
5. Method of assessment	<p>Competency in this Unit should be assessed through:</p> <p>5.1 Satisfy endorsed Assessment guidelines</p> <p>5.2 Include direct task observation in real or simulated conditions</p> <p>5.3 Questioning to clarify competency observations</p> <p>5.4 Provide evidence that is Sufficient & Valid</p> <p>5.5 Take account of cultural, and disability variations</p> <p><i>Evidence provided for competency determination will be Valid, Sufficient & Current</i></p>
6. Context for assessment	<p>6.1 Competency should be assessed in the workplace or simulated environment.</p> <p>6.2 Assessment must be undertaken in accordance with Lao PDR CBT assessment guidelines</p>

UNIT 12 PERFORM PERIODICAL MAINTENANCE

Unit Code	723.7231.132.007.01
Unit Descriptor	This Unit covers the Skills, Knowledge and Attitudes required carrying out scheduled periodic maintenance to vehicle, tools and equipment based on the required performance standards.

UNIT 12 Elements & Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA Italicized terms as elaborated in the Rang of Variables
1. Prepare to carry out scheduled periodic maintenance	1.1 Nature and scope of work requirements are identified, interpreted and confirmed 1.2 Plan, select and prepare tasks in accordance with OHS requirements and company/workshop standard operating procedures 1.3 Resources required to carry out scheduled periodic maintenance are sourced. Work area, hand tools, equipment, maintenance specification data/manual/handbook and spare parts are identified and prepared
2. Diagnose a vehicle/ tools/equipment	2.1 Vehicle/ tools/equipment system/components are diagnosed in accordance with company/manufacturer/component supplier maintenance manual requirements 2.2 Results are documented and Report is forwarded to persons for action in accordance with workplace procedures
3. Carry out scheduled periodic maintenance	3.1 Carry out scheduled periodic maintenance to vehicle/ tools/equipment system/components and perform test for correct operation accordance with company/manufacturer/component supplier specifications 3.2 Adjustments made during the maintenance are in accordance with manufacturer/component supplier specifications. 3.3 Perform final inspection to ensure protective guards, safety features and cowlings are in place.
4. Restore work area and complete documentation	4.1 Restore and clean work area, tools and equipment. 4.2 Complete and restore Documentation includes job cards, check list, reports and workshop manuals.

UNIT 12 Range of Variables

VARIABLES	RANGE
1. Maintenance task/ components	Maintenance may include: 1.1 Lubrication intervals 1.2 Filter replacement 1.3 Components clearance check 1.4 Components cleaning 1.5 Components adjustment 1.6 Wear check Vehicle: 1.7 Engine Components 1.8 Cassie components 1.9 Electrical components Workshop: 1.10 Tools 1.11 Equipment 1.12 Test Equipment
2. Applications	Maintenance components may be fitted to: 2.1 Light vehicles 2.2 Agro-Machinery 2.3 Outdoor power equipment 2.4 Marine craft 2.5 Plant 2.6 Workshop facility
3. Manuals and Information	Manuals and Information may include: 3.1 Verbal or written and graphical instructions, signage, work schedules/plans/specifications 3.2 Safe work procedures related to task 3.3 Regulatory legislative requirements pertaining to the automotive industry including Lao Design Rules 3.4 Company/manufacturer/component supplier maintenance and specification data/manual/handbook 3.5 Company/manufacturer/component supplier periodic service maintenance data manual/handbook
4. Tools and Equipment	Tools and Equipment may include: 4.1 Hand tools

	<p>4.2 Power tools</p> <p>4.3 Measuring instruments (Vernier, micrometer, telescope gauge, dial tester indicator, plastic- gauge, torque wrench, feeler gauge)</p> <p>4.4 Engine lifting device</p> <p>4.5 Two post vehicle lift or long floor jack and support stand set</p> <p>4.6 Lubricant dispensing equipment</p> <p>4.7 Cleaning Tools and Material</p>
5. Company/ workshop standard operating procedures	<p>Company/workshop standard operating procedures include:</p> <p>5.1 Verbal or written instructions issued by authorized personal</p> <p>5.2 Job order slip</p> <p>5.3 Spare parts ordering form</p> <p>5.4 Periodic maintenance schedule plan/form</p> <p>5.5 Wearing of Personal Protective Equipment</p>
6. Occupational Health and Safety (OHS) requirements	<p>OHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures, and may include:</p> <p>6.1 To conduct of operational risk assessment and treatments associated with Vehicular movements, hazardous substances, Electrical safety manual, lifting and shifting working in proximity to others a site visitors</p> <p>6.2 Use of personal protective equipment that include prescribed under legislation regulations codes of practice and workplace policies and practice</p>

UNIT 12 Evidence Guide

1. Critical aspects of Competency	<p>Assessment requires evidence that the candidate:</p> <p>1.1 Selecting and used appropriate procedure, manuals, tools and equipment to carry out task</p> <p>1.2 Diagnosing and used method for system/components test in reference to company/manufacturer/component supplier repair requirements</p> <p>1.3 Conducting the maintenance to system/ components in accordance with workplace and company/manufacturer/component supplier</p>
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	<p>requirements</p> <p>1.4 Performing completed job documentation and work area restore</p>
2. Underpinning knowledge and attitudes	<p>2.1 OHS requirements</p> <p>2.2 Relevant company/workshop operating procedure</p> <p>2.3 Relevant maintenance specification data/manual/handbook</p> <p>2.4 Operation and function to maintained vehicle and workshop system/components</p> <p>2.5 Mechanic/ technician units of measurement</p> <p>2.6 Maintenance diagnosis procedure for vehicle and workshops</p> <p>2.7 Maintenance procedure for vehicle and workshops</p> <p>2.8 Hand/ power tools and workshop Equipment for task</p> <p>2.9 Relevant Test equipment for task</p> <p>2.10 Dangers of working with test equipment</p> <p>2.11 Vehicle moving, positioning and lifting for task</p> <p>2.12 Final inspection procedure</p> <p>2.13 Company/workshop Documentation requirements</p>
3. Underpinning skills	<p>3.1 Working safely</p> <p>3.2 Using Personal Protective Equipment</p> <p>3.3 Communication effectively</p> <p>3.4 Organizing materials to be used</p> <p>3.5 Using and interpreting maintenance specification data/manual/handbook</p> <p>3.6 Proper handling and use of tools and equipment</p> <p>3.7 Mounting and demount system components</p> <p>3.8 Using test equipment for task</p> <p>3.9 Maintaining orderliness and cleanliness</p> <p>3.10 Maintaining customer records</p>
4. Resource implications	<p>The following resources should be provided:</p> <p>4.1 Workplace location or simulated work area</p> <p>4.2 Appropriate tools and equipment to this task</p> <p>4.3 Materials relevant to the task</p> <p>4.4 Specifications and work instruction to the task</p>
5. Method of assessment	<p>Competency in this Unit should be assessed through:</p> <p>5.1 Direct Observation on actual workplace</p>

	<p>5.2 Questions to underpinning knowledge</p> <p>5.3 Demonstration on simulated situation</p> <p>5.4 Written/Oral examination</p> <p><i>Evidence provided for competency determination will be Valid, Sufficient & Current</i></p>
6. Context for assessment	<p>6.1 Competency should be assessed on the job or simulated environment.</p> <p>6.2 Assessment must be undertaken in accordance with Lao PDR CBT assessment guidelines</p>

G CORE UNITS OF COMPETENCY

UNIT 13 PREPARE WELD AND/OR BRAZE MATERIALS

Unit Code	721.7212.033.018.01
Unit Descriptor	This Unit covers the Skills, Knowledge and Attitudes required to preparing weld and/or braze materials to work requirements and manufacture specifications.

UNIT 13 Elements & Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA Italicized terms as elaborated in the Rang of Variables
1. Plan to prepare weld and/or braze materials	1.1 Nature and scope of work requirements are identified, interpreted and confirmed 1.2 Plan, select and prepare tasks in accordance with OHS requirements and company/workshop standard operating procedures 1.3 Resources required for preparing welding materials are sourced. Work area, hand tools, equipment, work specification data/manual/handbook and welding material are identified and prepared
2. Prepare weld and/or braze materials	2.1 Set up cutting equipment for weld and/or braze materials in accordance with work and OHS/company/manufacturer requirements 2.2 Cut and prepare edge of weld and/or braze materials in accordance with work and OHS/company/manufacturer requirements 2.3 Clean surfaces of weld and/or braze materials in accordance with work and OHS/company/manufacturer requirements 2.4 Prepare weld and/or braze consumables in accordance with work and OHS/company/manufacturer requirements 2.5 Prepare weld and/or braze safety and protective equipment in accordance with work and OHS/company/ manufacturer requirements
3. Restore work area and complete documentation	3.1 Restore and clean work area, tools and equipment. 3.2 Complete and restore Documentation includes job cards, check list, reports and workshop manuals.

UNIT 13 Range of Variables

VARIABLES	RANGE
1. Welding process	<p>Divination should be according to BS EN ISO 4063:</p> <p>1.1 GAS WELDING PROCESS 311 Oxy-acetylene gas welding</p> <p>1.2 MANUAL METAL ARC WELDING PROCESS 111 Metal Arc Welding 13 Gas-Shielded Meta Arc welding 131 MIG Welding: Metal-Arc Inert Gas Welding 135 MAG Welding: Metal-Arc Active Gas Welding 141 TIG Welding: Tungsten Inert Gas Arc-Welding</p> <p>1.3 RESISTANCE WELDING 21 Electric spot welding 21</p>
2. Materials and consumables	<p>May include:</p> <p>2.1 Mild steel 2.2 Carbon steel 2.3 Alloy steel 2.4 Cutting gases 2.5 Gouging electrodes 2.6 Grinding/cutting discs 2.7 Run on/run off, backing plates/ring 2.8 Cutting accessories 2.9 Cleaning materials</p>
3. Specification	<p>Specifications based on</p> <p>3.1 Welding codes 3.2 Reference Industry standards 3.3 Client specification</p>
4. Manuals and Information	<p>Manuals and Information may include:</p> <p>4.1 Verbal or written and graphical instructions, signage, work schedules/plans/specifications 4.2 Safe work procedures related to task 4.3 Regulatory legislative requirements pertaining to the automotive industry including Lao Design Rules 4.4 Company/manufacturer/component supplier welding manual/handbook</p>

	<p>4.5 Company/manufacturer/component supplier welding specification data/manual/handbook</p> <p>4.6 Company/manufacturer/component supplier periodic service maintenance data manual/handbook</p>
5. Tools and Equipment	<p>Tools and Equipment may include:</p> <p>5.1 Hand tools</p> <p>5.2 Power tools</p> <p>5.3 Torque wrench</p> <p>5.4 Measurements tools</p> <p>5.5 Cutting equipment</p> <p>5.6 Welding equipment</p> <p>5.7 Lifting equipment</p> <p>5.8 Welding Support stand</p> <p>5.9 Personal protective equipment</p>
6. Company/ workshop standard operating procedures	<p>Company/workshop standard operating procedures include:</p> <p>6.1 Verbal or written instructions issued by authorized personal</p> <p>6.2 Job order slip</p> <p>6.3 Spare parts ordering form</p> <p>6.4 Material ordering form</p> <p>6.5 Wearing of Personal Protective Equipment</p>
7. Occupational Health and Safety (OHS) requirements	<p>OHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures, and may include:</p> <p>7.1 To conduct of operational risk assessment and treatments associated with Vehicular movements, hazardous substances, Electrical safety manual, lifting and shifting working in proximity to others an site visitors</p> <p>7.2 Use of personal protective equipment that include prescribed under legislation regulations codes of practice and workplace policies and practice</p>

UNIT 13 Evidence Guide

1. Critical aspects of Competency	<p>Assessment requires evidence that the candidate:</p> <p>1.1 Selecting and used appropriate procedure, manuals, tools and equipment to carry out task</p> <p>1.2 Conducting to prepare of welding materials in</p>
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	<p>accordance with work and OHS/company/manufacturer requirements</p> <p>1.3 Performing completed job documentation and work area restore</p>
2. Underpinning knowledge and attitudes	<p>2.1 OHS requirements</p> <p>2.2 Relevant company/workshop operating procedure</p> <p>2.3 Relevant welding specification data/manual/handbook</p> <p>2.4 Kinds and specification of welding material</p> <p>2.5 Mechanic/ technician units of measurement</p> <p>2.6 Procedure of welding material preparation</p> <p>2.7 Hand/ power tools and workshop equipment for task</p> <p>2.8 Dangers of working with cutting equipment</p> <p>2.9 Material/equipment moving, positioning and lifting for task</p> <p>2.10 Workshop and Equipment maintenance</p> <p>2.11 Company/workshop Documentation requirements</p>
3. Underpinning skills	<p>3.1 Working safely</p> <p>3.2 Using Personal Protective Equipment</p> <p>3.3 Communication effectively</p> <p>3.4 Organizing materials to be used</p> <p>3.5 Using and interpreting welding specification data manual/handbook</p> <p>3.6 Proper handling and use of tools and equipment</p> <p>3.7 Use of material preparation techniques</p> <p>3.8 Maintaining orderliness and cleanliness</p> <p>3.9 Maintaining customer records</p>
4. Resource implications	<p>The following resources should be provided:</p> <p>4.1 Workplace location or simulated work area</p> <p>4.2 Appropriate tools and equipment to this task</p> <p>4.3 Materials relevant to the task</p> <p>4.4 Specifications and work instruction to the task</p>
5. Method of assessment	<p>Competency in this Unit should be assessed through:</p> <p>5.1 Direct Observation on actual workplace</p> <p>5.2 Questions to underpinning knowledge</p> <p>5.3 Demonstration on simulated situation</p> <p>5.4 Inspection of prepared welding material</p> <p>5.5 Written/Oral examination</p>

	<i>Evidence provided for competency determination will be Valid, Sufficient & Current</i>
6. Context for assessment	<p>6.1 Competency should be assessed on workplace or simulated environment.</p> <p>6.2 Assessment must be undertaken in accordance with Lao PDR CBT assessment guidelines</p>

UNIT 14 SET UP WELD AND/OR BRAZE EQUIPMENT

Unit Code	721.7212.033.019.01
Unit Descriptor	This Unit covers the Skills, Knowledge and Attitudes required setting up weld and/or braze equipment and/or accessories to work requirements and manufacture specifications.

UNIT 14 Elements & Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA Italicized terms as elaborated in the Rang of Variables
1. Plan to set up weld and/or braze equipment and/or accessories	1.1 Nature and scope of work requirements are identified, interpreted and confirmed 1.2 Plan, select and prepare tasks in accordance with OHS requirements and company/workshop standard operating procedures 1.3 Resources required to set-up weld and/or braze equipment/ accessories are sourced. Work area, hand tools, equipment, work specification data/manual/handbook and welding equipment/accessories are identified and prepared
2. Set up weld and/or braze equipment and/or accessories	2.1 Set up weld and/or braze machine and/or equipment in accordance with work and OHS/company/ manufacturer requirements without causing damage to the tools, equipment and materials 2.2 Set up weld and/or braze machine and/or accessories in accordance with work and OHS/company/ manufacturer requirements 2.3 Set up pre-heating tools and/or equipment in accordance with work and OHS/company/ manufacturer requirements 2.4 Conduct final safety check to weld and/or braze equipment and/or accessories set up
3. Restore work area and complete documentation	3.1 Restore and clean work area, tools and equipment. 3.2 Complete and restore Documentation includes job cards, check list, reports and workshop manuals.

UNIT 14 Range of Variables

VARIABLES	RANGE
1. Welding process	Divination should be according to BS EN ISO 4063: 1.1 GAS WELDING PROCESS 311 Oxy-acetylene gas welding 1.2 MANUAL METAL ARC WELDING PROCESS 111 Metal Arc Welding 13 Gas-Shielded Meta Arc welding 131 MIG Welding: Metal-Arc Inert Gas Welding 135 MAG Welding: Metal-Arc Active Gas Welding 141 TIG Welding: Tungsten Inert Gas Arc-Welding 1.3 RESISTANCE WELDING 21 Electric spot welding 21
2. Welding machines/equipment	Machine types may include: 2.1 Alternating current (AC) 2.2 Direct current (DC) 2.3 Constant current 2.4 Constant voltage
3. Polarity	Application and uses 3.1 Direct current – electrode positive (reverse polarity) 3.2 Direct current – electrode negative (straight polarity) 3.3 Alternating current
4. Gases	4.1 Pure inert gas (argon, etc.) 4.2 Mixed gases 4.3 Pure CO ₂
5. Specification	Specifications based on 5.1 Welding codes 5.2 Reference Industry standards 5.3 Client specification
6. Manuals and Information	Manuals and Information may include: 6.1 Verbal or written and graphical instructions, signage, work schedules/plans/specifications 6.2 Safe work procedures related to task 6.3 Regulatory legislative requirements pertaining to the automotive industry including Lao Design Rules 6.4 Company/manufacturer/component supplier welding

	<p>manual/handbook</p> <p>6.5 Company/manufacturer/component supplier welding specification data/manual/handbook</p> <p>6.6 Company/manufacturer/component supplier periodic service maintenance data manual/handbook</p>
7. Tools, equipment and accessories	<p>Tools and Equipment may include:</p> <p>7.1 Hand tools</p> <p>7.2 Power tools</p> <p>7.3 Welding machines</p> <p>7.4 Welding guns</p> <p>7.5 Regulators and flow meters</p> <p>7.6 Gas hoses and adaptors</p> <p>7.7 Gas cylinders and gas heaters</p> <p>7.8 Filters, gas nozzle and insulators</p> <p>7.9 Contact tips</p> <p>7.10 Wire feeders and wire cutter</p> <p>7.11 Cable liners and gas diffusers</p> <p>7.12 Gas Tanks</p> <p>7.13 Welding equipment trolley</p> <p>7.14 Lifting equipment</p> <p>7.15 Welding Support stand</p> <p>7.16 Ventilator</p> <p>7.17 Personal protective equipment</p>
8. Company/ workshop standard operating procedures	<p>Company/workshop standard operating procedures include:</p> <p>8.1 Verbal or written instructions issued by authorized personal</p> <p>8.2 Job order slip</p> <p>8.3 Spare parts ordering form</p> <p>8.4 Material ordering form</p> <p>8.5 Wearing of Personal Protective Equipment</p>
9. Occupational Health and Safety (OHS) requirements	<p>OHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures, and may include:</p> <p>9.1 To conduct of operational risk assessment and treatments associated with Vehicular movements, hazardous substances, Electrical safety manual, lifting and shifting working in proximity to others a site</p>

	visitors
	9.2 Use of personal protective equipment that include prescribed under legislation regulations codes of practice and workplace policies and practice

UNIT 14 Evidence Guide

1. Critical aspects of Competency	<p>Assessment requires evidence that the candidate:</p> <p>1.1 Selecting and used appropriate procedure, manuals, tools and welding equipment/accessories to carry out task</p> <p>1.2 Conducting to set up welding equipment/accessories in accordance with work and OHS/company/mmanufacturer requirements</p> <p>1.3 Performing completed job documentation and work area restore</p>
2. Underpinning knowledge and attitudes	<p>2.1 OHS requirements</p> <p>2.2 Relevant company/workshop operating procedure</p> <p>2.3 Relevant welding specification data/manual/handbook</p> <p>2.4 Kinds and specification of welding equipment/accessories</p> <p>2.5 Basic electricity to perform task</p> <p>2.6 Mechanic/ technician units of measurement</p> <p>2.7 Procedure of welding equipment/accessories preparation</p> <p>2.8 Hand/ power tools and workshop equipment for task</p> <p>2.9 Dangers of working with welding equipment</p> <p>2.10 Workshop and Equipment maintenance</p> <p>2.11 Company/workshop Documentation requirements</p>
3. Underpinning skills	<p>3.1 Working safely</p> <p>3.2 Using Personal Protective Equipment</p> <p>3.3 Communication effectively</p> <p>3.4 Organizing material and welding equipment/accessories to be used</p> <p>3.5 Using and interpreting welding specification data manual/handbook</p> <p>3.6 Proper handling and use of tools and equipment</p> <p>3.7 Conduction of welding equipment/accessories set up</p> <p>3.8 Maintaining orderliness and cleanliness</p>

	3.9 Maintaining customer records
4. Resource implications	<p>The following resources should be provided:</p> <p>4.1 Ventilated workplace location or simulated work area</p> <p>4.2 Appropriate tools and welding equipment accessories to this task</p> <p>4.3 Materials relevant to the task</p> <p>4.4 Specifications and work instruction to the task</p> <p>4.5 Personal protective equipment</p>
5. Method of assessment	<p>Competency in this Unit should be assessed through:</p> <p>5.1 Direct Observation on actual workplace</p> <p>5.2 Questions to underpinning knowledge</p> <p>5.3 Demonstration on simulated situation</p> <p>5.4 Written/Oral examination</p> <p><i>Evidence provided for competency determination will be Valid, Sufficient & Current</i></p>
6. Context for assessment	<p>6.1 Competency should be assessed while a task is being undertaken in the workplace or simulated environment.</p> <p>6.2 Assessment must be undertaken in accordance with Lao PDR CBT assessment guidelines</p>

UNIT 15 FIT-UP WELD AND/OR BRAZE MATERIALS

Unit Code	721.7212.033.020.01
Unit Descriptor	This Unit covers the Skills, Knowledge and Attitudes required fit-up weld and/or braze materials to work requirements and manufacture specifications.

UNIT 15 Elements & Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA Italicized terms as elaborated in the Rang of Variables
1. Prepare fit-up weld and/or brazematerials	1.1 Nature and scope of work requirements are identified, interpreted and confirmed 1.2 Plan, select and prepare tasks in accordance with OHS requirements and company/workshop standard operating procedures 1.3 Resources required to fit-up weld and/or brazematerials are sourced. Work area, hand tools, equipment, work specification data/manual/handbook and welding equipment/accessories are identified and prepared
2. Fit-up weld and/or brazematerials	2.1 Joints are cleaned to perform fit-up tacking 2.2 Perform tack weld and/or braze in accordance with work and company/ manufacturer requirements without causing damage to the tools, equipment and materials 2.3 Check root gap and alignment in accordance with work and company/ manufacturer requirements 2.4 Set up welding positioner in accordance with OHS, work and company/ manufacturer requirements
3. Restore work area and complete documentation	3.1 Restore and clean work area, tools and equipment. 3.2 Complete and restore Documentation includes job cards, check list, reports and workshop manuals.

UNIT 15 Range of Variables

VARIABLES	RANGE
1. Tack welding	Kinds of tacking 1.1 Bridge tacking 1.2 Permanent tacking

	1.3 Temporary tacking
2. Visually and dimensionally acceptable	2.1 Acceptable tack welds 2.2 Fully fused to the base metal 2.3 Free from defects and discontinuities 2.4 Evenly distributed
3. Root gap and alignment	Based on 3.1 Welding codes and specifications 3.2 Reference Industry standards 3.3 Client requirements and specifications
4. Backing materials	4.1 Stiffeners 4.2 Backing plate 4.3 Strong back
5. Manuals and Information	Manuals and Information may include: 5.1 Verbal or written and graphical instructions, signage, work schedules/plans/specifications 5.2 Safe work procedures related to task 5.3 Regulatory legislative requirements pertaining to the automotive industry including Lao Design Rules 5.4 Company/manufacturer/component supplier welding manual/handbook 5.5 Company/manufacturer/component supplier welding specification data /manual/handbook 5.6 Company/manufacturer/component supplier periodic service maintenance data manual/handbook
6. Tools and equipment	Tools and Equipment may include: 6.1 Hand tools 6.2 Power tools 6.3 Welding equipment 6.4 Cleaning equipment and material 6.5 Personal protective equipment
7. Company/ workshop standard operating procedures	Company/workshop standard operating procedures include: 7.1 Verbal or written instructions issued by authorized personal 7.2 Job order slip 7.3 Spare parts ordering form 7.4 Material ordering form

	7.5 Wearing of Personal Protective Equipment
8. Occupational Health and Safety (OHS) requirements	<p>OHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures, and may include:</p> <p>8.1 To conduct of operational risk assessment and treatments associated with Vehicular movements, hazardous substances, Electrical safety manual, lifting and shifting working in proximity to others a site visitors</p> <p>8.2 Use of personal protective equipment that include prescribed under legislation regulations codes of practice and workplace policies and practice</p>

UNIT 15 Evidence Guide

1. Critical aspects of Competency	<p>Assessment requires evidence that the candidate:</p> <p>1.1 Selecting and used appropriate procedure, manuals, tools and welding equipment/accessories to carry out task</p> <p>1.2 Conducting to fit-up welding materials in accordance with work and OHS/company/manufacturer requirements</p> <p>1.3 Performing completed job documentation and work area restore</p>
2. Underpinning knowledge and attitudes	<p>2.1 OHS requirements</p> <p>2.2 Relevant company/workshop operating procedure</p> <p>2.3 Relevant welding specification data/manual/handbook</p> <p>2.4 Interpretation of welding plans and codes</p> <p>2.5 Mechanic/ technician units of measurement</p> <p>2.6 Fit-up and alignment tolerances</p> <p>2.7 Fit-up welding material procedure</p> <p>2.8 Identification of welding defects</p> <p>2.9 Hand/ power tools and workshop equipment for task</p> <p>2.10 Dangers of working with welding equipment</p> <p>2.11 Workshop and Equipment maintenance</p> <p>2.12 Company/workshop Documentation requirements</p>
3. Underpinning skills	<p>3.1 Working safely</p> <p>3.2 Using Personal Protective Equipment</p> <p>3.3 Communication effectively</p>

	<p>3.4 Organizing material and equipment to be used</p> <p>3.5 Using and interpreting welding specification data manual/handbook</p> <p>3.6 Proper handling and use of tools and equipment</p> <p>3.7 Using of Measuring skills</p> <p>3.8 Applying weld techniques</p> <p>3.9 Rectifying weld defects</p> <p>3.10 Maintaining orderliness and cleanliness</p> <p>3.11 Maintaining customer records</p>
4. Resource implications	<p>The following resources should be provided:</p> <p>4.1 Ventilated workplace location or simulated work area</p> <p>4.2 Appropriate tools and welding equipment to this task</p> <p>4.3 Materials relevant to the task</p> <p>4.4 Specifications and work instruction to the task</p> <p>4.5 Personal protective equipment</p>
5. Method of assessment	<p>Competency in this Unit should be assessed through:</p> <p>5.1 Direct Observation on actual workplace</p> <p>5.2 Questions to underpinning knowledge</p> <p>5.3 Demonstration on simulated situation</p> <p>5.4 Written/Oral examination</p> <p><i>Evidence provided for competency determination will be Valid, Sufficient & Current</i></p>
6. Context for assessment	<p>6.1 Competency should be assessed while a task is being undertaken in the workplace or simulated environment.</p> <p>6.2 Assessment must be undertaken in accordance with Lao PDR CBT assessment guidelines</p>

UNIT 16 REPAIR WELDS

Unit Code	721.7212.033.021.01
Unit Descriptor	This Unit covers the Skills, Knowledge and Attitudes required diagnose and repair weld defects to manufacture specifications.

UNIT 16 Elements & Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA Italicized terms as elaborated in the Rang of Variables
1. Prepare to repair weld defects	1.1 Nature and scope of work requirements are identified, interpreted and confirmed 1.2 Plan, select and prepare tasks in accordance with OHS requirements and company/workshop standard operating procedures 1.3 Resources required to repair weld defects are sourced. Work area, hand tools, equipment, weld specification data/manual/handbook and welding material are identified and prepared
2. Diagnose weld defects	2.1 Weld defects are diagnosed in accordance with company/maker/manufacture/component supplier weld manual requirements 2.2 Results are documented and Report is forwarded to persons for action in accordance with workplace procedures
3. Repair welds	3.1 Locate and mark weld defects 3.2 Clean up welding material 3.3 Remove weld defects in accordance with company/maker/manufacture/ component supplier specifications. 3.4 Perform re-welding in accordance with work/maker/manufacture/component supplier specifications. 3.5 Conduct weld visually check after re-welding for acceptability
4. Restore work area and complete documentation	4.1 Restore and clean work area, tools and equipment. 4.2 Complete and restore Documentation includes job cards, check list, reports and workshop manuals.

UNIT 16 Range of Variables

VARIABLES	RANGE
1. Weld defects	May be including: <ul style="list-style-type: none"> 1.1 Porosity 1.2 Root undercut and solid material inclusion 1.3 Concavity/convexity 1.4 Degree of reinforcement 1.5 Burn Through 1.6 Crater cracks 1.7 Cracks 1.8 Lack of Fusion (tie-in) 1.9 Pinholes/Blowholes 1.10 Under Fill 1.11 Excess/incomplete penetration 1.12 Overlap 1.13 Misalignment 1.14 Distortion
2. Removed/excavated	Defects should be removed by <ul style="list-style-type: none"> 2.1 Grinding 2.2 Arc/air gouging 2.3 Cutting (mechanical, gas) 2.4 Plasma gouging
3. Manuals and Information	Manuals and Information may include: <ul style="list-style-type: none"> 3.1 Verbal or written and graphical instructions, signage, work schedules/plans/specifications 3.2 Safe work procedures related to task 3.3 Regulatory legislative requirements pertaining to the automotive industry including Lao Design Rules 3.4 Company/manufacturer/component supplier welding manual/handbook 3.5 Company/manufacturer/component supplier welding specification data manual/handbook
4. Tools and Equipment	Tools and Equipment may include: <ul style="list-style-type: none"> 4.1 Hand tools 4.2 Power tools 4.3 Welding machine and accessories

	<p>4.4 Gouging outfit and accessories</p> <p>4.5 Portable grinder</p> <p>4.6 Chipping hammer</p> <p>4.7 Files</p> <p>4.8 Extension cord and lightings</p> <p>4.9 Barriers</p> <p>4.10 Dye-penetrant kit</p>
5. Company/ workshop standard operating procedures	<p>Company/workshop standard operating procedures include:</p> <p>5.1 Verbal or written instructions issued by authorized personal</p> <p>5.2 Job order slip</p> <p>5.3 Spare parts ordering form</p> <p>5.4 Wearing of Personal Protective Equipment</p>
6. Occupational Health and Safety (OHS) requirements	<p>OHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures, and may include:</p> <p>6.1 To conduct of operational risk assessment and treatments associated with Vehicular movements, hazardous substances, Electrical safety manual, lifting and shifting working in proximity to others a site visitors</p> <p>6.2 Use of personal protective equipment that include prescribed under legislation regulations codes of practice and workplace policies and practice</p>

UNIT 16 Evidence Guide

1. Critical aspects of Competency	<p>Assessment requires evidence that the candidate:</p> <p>1.1 Selecting and used appropriate procedure, manuals, tools and equipment to carry out task</p> <p>1.2 Diagnosing and used method for weld defects test in reference to company/matrixufacturer/component supplier repair requirements</p> <p>1.3 Conducting the repair of weld defects in accordance with workplace and company/matrixufacturer/ component supplier requirements</p> <p>1.4 Performing completed job documentation and work area restore</p>
2. Underpinning knowledge and	<p>2.1 OHS requirements</p>

attitudes	<p>2.2 Relevant company/workshop operating procedure</p> <p>2.3 Relevant welding specification data/manual/handbook</p> <p>2.4 Interpretation of welding plans and codes</p> <p>2.5 Mechanic/ technician units of measurement</p> <p>2.6 Interpretation of weld repair procedure</p> <p>2.7 Causes and identification of welding defects</p> <p>2.8 Hand/ power tools and welding equipment for task</p> <p>2.9 Workshop and Equipment maintenance</p> <p>2.10 Company/workshop Documentation requirements</p>
3. Underpinning skills	<p>3.1 Working safely</p> <p>3.2 Using Personal Protective Equipment</p> <p>3.3 Communication effectively</p> <p>3.4 Organizing materials to be used</p> <p>3.5 Using and interpreting welding specification data/manual/handbook</p> <p>3.6 Identifying weld defects and used repair technique</p> <p>3.7 Proper handling and use of tools and equipment for task</p> <p>3.8 Maintaining orderliness and cleanliness</p> <p>3.9 Maintaining customer records</p>
4. Resource implications	<p>The following resources must be provided:</p> <p>4.1 Workplace location or simulated work area</p> <p>4.2 Appropriate tools and equipment to this task</p> <p>4.3 Materials relevant to the task</p> <p>4.4 Specifications and work instruction to the task</p>
5. Method of assessment	<p>Competency in this Unit may be assessed through:</p> <p>5.1 Direct Observation on actual workplace</p> <p>5.2 Questions to underpinning knowledge</p> <p>5.3 Demonstration on simulated situation</p> <p>5.4 Written/Oral examination</p> <p><i>Evidence provided for competency determination will be Valid, Sufficient & Current</i></p>
6. Context for assessment	<p>6.1 Competency should be assessed while a task is being undertaken in the workplace or simulated environment.</p> <p>6.2 Assessment must be undertaken in accordance with Lao PDR CBT assessment guidelines</p>

UNIT 17 WELD USE METAL ARC WELDING PROCESS

Unit Code	721.7212.033.023.01
Unit Descriptor	This Unit covers the Skills, Knowledge and Attitudes required to weld using the metal arc welding (MAW) and/or shielded metal arc welding (SMAW) process in accordance to work requirements and manufacture specifications.

UNIT 17 Elements & Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA Italicized terms as elaborated in the Rang of Variables
1. Prepare to weld use MAW/SMAW	1.1 Nature and scope of work requirements are identified, interpreted and confirmed 1.2 Plan, select and prepare tasks in accordance with OHS requirements and company/workshop standard operating procedures 1.3 Resources required for preparing welding materials are sourced. Work area, hand tools, equipment, work specification data/manual/handbook and welding material are identified and prepared
2. Weld use MAW/SMAW	2.1 Perform root pass in accordance with work, welding and OHS/company/manufacture requirements 2.2 Clean root pass in accordance with work, welding and OHS/company/manufacture requirements 2.3 Weld is visually checked for defects and if necessary repaired in accordance with work, welding and OHS/company/manufacture requirements 2.4 Weld subsequent/ filling passes in accordance with work, welding and OHS/company/manufacture requirements 2.5 Weld is visually checked for defects and if necessary repaired in accordance with work, welding and OHS/company/manufacture requirements 2.6 Perform capping in accordance with work, welding and OHS/company/manufacture requirements 2.7 Weld is visually checked for defects and if necessary repaired in accordance with work, welding and OHS/company/manufacture requirements
3. Restore work area and complete documentation	3.1 Restore and clean work area, tools and equipment. 3.2 Complete and restore Documentation includes job cards, check list, reports and workshop manuals.

UNIT 17 Range of Variables

VARIABLES	RANGE
1. Welding process	Definition should be according to BS EN ISO 4063: MANUAL METAL ARC WELDING PROCESS 1.1 111 Metal Arc Welding 1.2 13 Gas-Shielded Meta Arc welding 1.3 131 MIG Welding: Metal-Arc Inert Gas Welding 1.4 135 MAG Welding: Metal-Arc Active Gas Welding 1.5 141 TIG Welding: Tungsten Inert Gas ArcWelding
2. Welding process standards (WPS)	WPS requirements: 2.1 Welding positions F-4F G-3G 2.2 Material thickness 1.6mm and above 2.3 Type of material Alloy-steel plates 2.4 Consumables Filler wire (diameter) Shielding gas (CO2 or other available mixed gas) 2.5 Travel speed 2.6 Current setting (polarity, amperage, voltage) 2.7 Shielding gas flow rate 2.8 Welding accessories 2.9 Types of metal transfer 2.10 Joint preparation
3. Weld defects	May include: 3.1 Porosity 3.2 Undercut 3.3 Arc Strike 3.4 Elongated intrusion 3.5 Concavity/convexity 3.6 Degree of reinforcement 3.7 Burn Through 3.8 Crater cracks 3.9 Cracks

	<p>3.10 Lack of Fusion</p> <p>3.11 Pinholes/Blowholes</p> <p>3.12 Under Fill</p> <p>3.13 Overlap</p> <p>3.14 Misalignment</p> <p>3.15 Distortion</p>
4. Specification	<p>Specifications based on</p> <p>4.1 Welding codes</p> <p>4.2 Reference Industry standards</p> <p>4.3 Client specification</p>
5. Manuals and Information	<p>Manuals and Information may include:</p> <p>5.1 Verbal or written and graphical instructions, signage, work schedules/plans/specifications</p> <p>5.2 Safe work procedures related to task</p> <p>5.3 Regulatory legislative requirements pertaining to the automotive industry including Lao Design Rules</p> <p>5.4 Company/manufacturer/component supplier welding manual/handbook</p> <p>5.5 Company/manufacturer/component supplier welding specification data/manual/handbook</p> <p>5.6 Company/manufacturer/component supplier periodic service maintenance data manual/handbook</p>
6. Tools and Equipment	<p>Tools and Equipment may include:</p> <p>6.1 Hand tools</p> <p>6.2 Power tools</p> <p>6.3 Measurements tools</p> <p>6.4 Cutting equipment</p> <p>6.5 Welding equipment</p> <p>6.6 Lifting equipment</p> <p>6.7 Welding Support stand</p> <p>6.8 Personal protective equipment</p> <p>6.9 Stand-by fire-fighting equipment</p>
7. Company/ workshop standard operating procedures	<p>Company/workshop standard operating procedures include:</p> <p>7.1 Verbal or written instructions issued by authorized personal</p>

	<p>7.2 Job order slip</p> <p>7.3 Spare parts ordering form</p> <p>7.4 Material ordering form</p> <p>7.5 Wearing of Personal Protective Equipment</p>
8. Occupational Health and Safety (OHS) requirements	<p>OHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures, and may include:</p> <p>8.1 To conduct of operational risk assessment and treatments associated with Vehicular movements, hazardous substances, Electrical safety manual, lifting and shifting working in proximity to others a site visitors</p> <p>8.2 Use of personal protective equipment that include prescribed under legislation regulations codes of practice and workplace policies and practice</p>

UNIT 17 Evidence Guide

1. Critical aspects of Competency	<p>Assessment requires evidence that the candidate:</p> <p>1.1 Selecting and used appropriate procedure, manuals, tools and equipment to carry out task</p> <p>1.2 Weld using the correct metal arc welding (MAW) and shielded metal arc welding (SMAW) process in accordance to work requirements and manufacture specifications</p> <p>1.3 Performing completed job documentation and work area restore</p>
2. Underpinning knowledge and attitudes	<p>2.1 OHS requirements</p> <p>2.2 Relevant company/workshop operating procedure</p> <p>2.3 Relevant welding specification data/manual/handbook</p> <p>2.4 Interpretation of welding plans and codes</p> <p>2.5 Kinds and specification of welding material</p> <p>2.6 Mechanic/ technicunits of measurement</p> <p>2.7 Procedure of MAW/SMAW welding process</p> <p>2.8 Welding materials and consumables</p> <p>2.9 Interpreting of welding defects</p> <p>2.10 Hand/ power tools, workshop and welding equipment for task</p> <p>2.11 Weld work dangers</p> <p>2.12 Workshop and Equipment maintenance</p>

	2.13 Company/workshop Documentation requirements
3. Underpinning skills	<p>3.1 Working safely</p> <p>3.2 Using Personal Protective Equipment</p> <p>3.3 Communication effectively</p> <p>3.4 Organizing materials to be used</p> <p>3.5 Using and interpreting welding specification data manual/handbook</p> <p>3.6 Applying MAW/SMAW welding techniques</p> <p>3.7 Rectifying weld defects</p> <p>3.8 Proper handling and use of tools and equipment</p> <p>3.9 Maintaining orderliness and cleanliness</p> <p>3.10 Maintaining customer records</p>
4. Resource implications	<p>The following resources should be provided:</p> <p>4.1 Workplace location or simulated work area</p> <p>4.2 Appropriate tools and equipment to this task</p> <p>4.3 Materials relevant to the task</p> <p>4.4 Specifications and work instruction to the task</p> <p>4.5 Personal Protective Equipment</p> <p>4.6 Stand-by fire-fighting equipment</p>
5. Method of assessment	<p>Competency in this Unit should be assessed through:</p> <p>5.1 Direct Observation on actual workplace</p> <p>5.2 Questions to underpinning knowledge</p> <p>5.3 Performance test (demonstration) workplace or simulated situation</p> <p>5.4 Inspection of weld work</p> <p>5.5 Written/Oral examination</p> <p><i>Evidence provided for competency determination will be Valid, Sufficient & Current</i></p>
6. Context for assessment	<p>6.1 Competency should be assessed on workplace or simulated environment.</p> <p>6.2 Assessment must be undertaken in accordance with Lao PDR CBT assessment guidelines</p>

UNIT 18 WELD USE OXY-ACETYLENE GAS WELDING PROCESS

Unit Code	721.7212.033.023.01
Unit Descriptor	This Unit covers the Skills, Knowledge and Attitudes required to weld/braze metals using the oxy-acetylene gas weld/braze process in accordance to work requirements and manufacture specifications.

UNIT 18 Elements & Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA Italicized terms as elaborated in the Rang of Variables
1. Prepare to weld and/or braze use OAGW	1.1 Nature and scope of work requirements are identified, interpreted and confirmed 1.2 Plan, select and prepare tasks in accordance with OHS requirements and company/workshop standard operating procedures 1.3 Resources required for preparing weld and/or braze materials are sourced. Work area, hand tools, equipment, work specification data/manual/handbook and welding material are identified and prepared
2. Weld and/or braze use OAGW	2.1 Materials for welding and/or brazing are prepared and aligned in accordance with the work plan and specifications 2.2 Distortion prevention measures are identified and applied in accordance with job requirements 2.3 Test runs are undertaken in accordance with the work plan and job requirements 2.4 Materials are welded and/or brazed using OAGW in accordance with the work plan, specifications, OHS and job requirements 2.5 Welds and/or brazes are cleaned using appropriate tools and techniques in accordance with the work plan and specifications 2.6 Welds and/or brazes are inspected visually and defects identified and repaired using appropriate techniques and in accordance with the work plan.
3. Restore work area and complete documentation	3.1 Restore and clean work area, tools and equipment. 3.2 Complete and restore Documentation includes job cards, check list, reports and workshop manuals.

UNIT 18 Range of Variables

VARIABLES	RANGE
1. Welding process	Definition should be according to BS EN ISO 4063: 1.1 GAS WELDING PROCESS 311 Oxy-acetylene gas welding
2. Welding process standards (WPS)	WPS requirements: 2.1 Welding position Flat, horizontal, vertical and overhead 2.2 Material type Pure copper Copper nickel Stainless steel Silver-based material 2.3 Type and size of consumables Pure copper filler wire (diameter 0.8 – 2.4mm) Copper nickel filler wire (diameter 0.8 – 2.4mm) Stainless filler wire (diameter 0.8 – 2.4 mm) Silver-based filler wire (0.8 – 2.4mm) Brazing fluxes 2.4 Type of pre-heating Blow torch 2.5 Type of gas Oxygen/acetylene Liquefied petroleum gas Liquefied natural gas 2.6 Flow rate as recommended 2.7 Type of insert 2.8 Metallic
3. Weld defects	May include: 3.1 Porosity 3.2 Undercut 3.3 Concavity/convexity 3.4 Degree of reinforcement 3.5 Burn through 3.6 Crater cracks 3.7 Cracks

	<p>3.8 Lack of fusion</p> <p>3.9 Overlap</p> <p>3.10 Pinholes/blowholes</p> <p>3.11 Underhill</p> <p>3.12 Misalignment</p> <p>3.13 Distortion</p>
4. Tanks or cylinders	<p>4.1 Oxygen/acetylene</p> <p>4.2 Liquefied petroleum gas</p> <p>4.3 Liquefied natural gas</p>
5. Specification	<p>Specifications based on</p> <p>5.1 Welding codes</p> <p>5.2 Reference Industry standards</p> <p>5.3 Client specification</p>
6. Manuals and Information	<p>Manuals and Information may include:</p> <p>6.1 Verbal or written and graphical instructions, signage, work schedules/plans/specifications</p> <p>6.2 Safe work procedures related to task</p> <p>6.3 Regulatory legislative requirements pertaining to the automotive industry including Lao Design Rules</p> <p>6.4 Company/manufacturer/component supplier welding manual/handbook</p> <p>6.5 Company/manufacturer/component supplier welding specification data/manual/handbook</p> <p>6.6 Company/manufacturer/component supplier periodic service maintenance data manual/handbook</p>
7. Tools and Equipment	<p>Tools and Equipment may include:</p> <p>7.1 Hand tools</p> <p>7.2 Power tools</p> <p>7.3 Measurements tools</p> <p>7.4 Cutting equipment</p> <p>7.5 OA welding equipment</p> <p>7.6 Lifting equipment</p> <p>7.7 Welding Support stand</p> <p>7.8 Personal protective equipment</p> <p>7.9 Stand-by fire-fighting equipment</p>
8. Company/ workshop standard operating	<p>Company/workshop standard operating procedures include:</p>

procedures	<p>8.1 Verbal or written instructions issued by authorized personal</p> <p>8.2 Job order slip</p> <p>8.3 Spare parts ordering form</p> <p>8.4 Material ordering form</p> <p>8.5 Wearing of Personal Protective Equipment</p>
9. Occupational Health and Safety (OHS) requirements	<p>OHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures, and may include:</p> <p>9.1 To conduct of operational risk assessment and treatments associated with Vehicular movements, hazardous substances, Electrical safety manual, lifting and shifting working in proximity to others a site visitors</p> <p>9.2 Use of personal protective equipment that include prescribed under legislation regulations codes of practice and workplace policies and practice</p>

UNIT 18 Evidence Guide

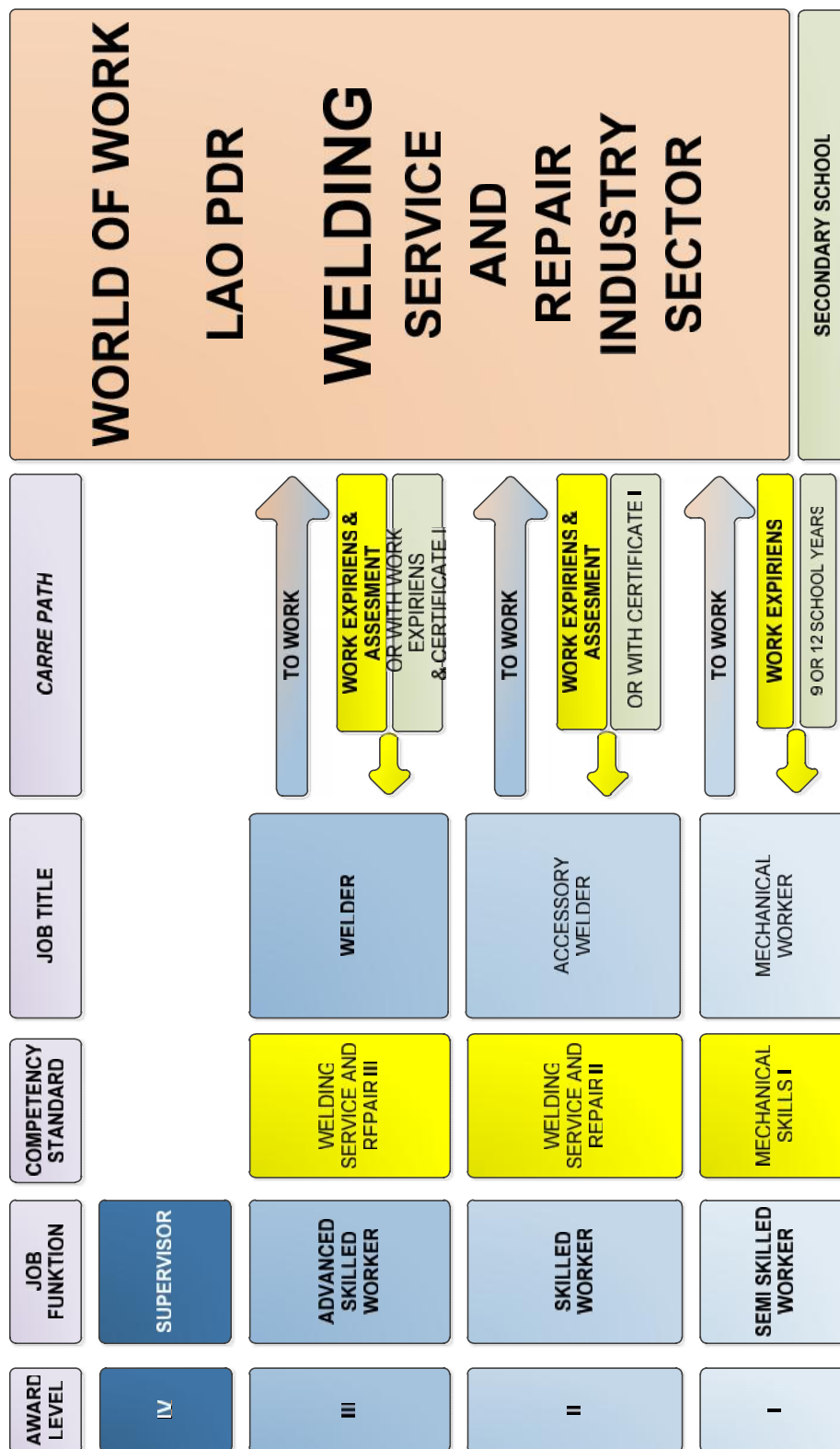
1. Critical aspects of Competency	<p>Assessment requires evidence that the candidate:</p> <p>1.1 Selecting and used appropriate procedure, manuals, tools and equipment to carry out task</p> <p>1.2 Weld/braze metals using the oxy-acetylene gas welding/brazing process in accordance to work requirements and manufacture specifications</p> <p>1.3 Performing completed job documentation and work area restore</p>
2. Underpinning knowledge and attitudes	<p>2.1 OHS requirements</p> <p>2.2 Relevant company/workshop operating procedure</p> <p>2.3 Relevant welding specification data/manual/handbook</p> <p>2.4 Interpretation of welding plans and codes</p> <p>2.5 Kinds and specification of welding material</p> <p>2.6 Mechanic/ technicunits of measurement</p> <p>2.7 Procedure of OA welding process</p> <p>2.8 Welding materials and consumables</p> <p>2.9 Interpreting of welding defects</p> <p>2.10 Hand/ power tools, workshop and welding equipment for task</p> <p>2.11 Weld work dangers</p>

	<p>2.12 Workshop and Equipment maintenance</p> <p>2.13 Company/workshop Documentation requirements</p>
3. Underpinning skills	<p>3.1 Working safely</p> <p>3.2 Using Personal Protective Equipment</p> <p>3.3 Communication effectively</p> <p>3.4 Organizing materials to be used</p> <p>3.5 Using and interpreting welding specification data manual/handbook</p> <p>3.6 Applying OA welding techniques</p> <p>3.7 Rectifying weld defects</p> <p>3.8 Proper handling and use of tools and equipment</p> <p>3.9 Maintaining orderliness and cleanliness</p> <p>3.10 Maintaining customer records</p>
4. Resource implications	<p>The following resources should be provided:</p> <p>4.1 Workplace location or simulated work area</p> <p>4.2 Appropriate tools and equipment to this task</p> <p>4.3 Materials relevant to the task</p> <p>4.4 Specifications and work instruction to the task</p> <p>4.5 Personal Protective Equipment</p> <p>4.6 Stand-by fire-fighting equipment</p>
5. Method of assessment	<p>Competency in this Unit should be assessed through:</p> <p>5.1 Direct Observation on actual workplace</p> <p>5.2 Questions to underpinning knowledge</p> <p>5.3 Performance test (demonstration) workplace or simulated situation</p> <p>5.4 Inspection of weld work</p> <p>5.5 Written/Oral examination</p> <p><i>Evidence provided for competency determination will be Valid, Sufficient & Current</i></p>
6. Context for assessment	<p>6.1 Competency should be assessed on workplace or simulated environment.</p> <p>6.2 Assessment must be undertaken in accordance with Lao PDR CBT assessment guidelines</p>

H ANNEX

ANNEX:

H.1 AWARD & PROGRESSION / ENTRY REQUIREMENTS



ANNEX:

H.2 COMPETENCY STANDARD DEVELOPMENT TEAM***STVET Project***

No.	Name and Surname	Organization/Company	Job Expert
1.	Mr Phouang PHOUTHAVONG	STVET Project	NC
2.	Mr Soulikone PHONAMAT	STVET Project	NC
3.	Mr Stephan GIEBEL	STVET Project	IC

Resource Person / Methodologist

4.	Mr Bounsuan NAXIENGKHAM	Vocational Education Development Center	Mech. M&R
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Resource Persons / Company & Industry

5.	Mr Somdeth LAKHONVONG	TNK Mitsubishi Lao Trading Co. Vientiane	Auto
6.	Mr Boualoy SIRIPANYA	Lao Toyota Service Co LTD. Vientiane	Auto
7.	Mr Vannakhone THAMOUNTHA	KOLAO	Motorbike

Resource Persons / Public & Private TVET Institutions

8.	Mr. Bounlong RATSAVONG	Vocational Training School Savannakhet	Motorbike
9.	Mr Seesomseun YARTSADAHAK	Lao-German Technical School Vientiane	Agro-Mach.
10.	Mr Phoutthasone KHAMPHANH	Vocational Training School Luang Prabang	Auto
11.	Mr Bontong XAIYAVONG	Vocational Education Development Center	Auto
12.	Mr Xenglor YONGNOU	Lao-Korea Training Center	Auto
13.	Mr Bountiew VANMANEVONG	Vientiane Professional Development College	Agro-Mach.
14.	Mr Khamsing CHANTHAVONGSA	Lao-German Technical School Vientiane	Welding
15.	Mr Sounthone NAMPANYA	Lao-German Technical School Vientiane	Welding
16.	Mr Vandy SISAVATH	Technical College Pakpasak Vientiane	Welding

