

COMPETENCY STANDARDS

GUNSMITHING SERVICES LEVEL III



METALS AND ENGINEERING SECTOR

TECHNICAL EDUCATION AND SKILLS DEVELOPMENT AUTHORITY
TESDA Complex East Service Road, South Luzon Expressway (SLEX),
Fort Bonifacio, Taguig City

TABLE OF CONTENTS

METALS AND ENGINEERING SECTOR GUNSMITHING SERVICES LEVEL III

	Page No.
SECTION 1 DEFINITION OF QUALIFICATION	1
SECTION 2 COMPETENCY STANDARDS	2 - 104
• Basic Competencies	3 - 40
• Common Competencies	41 – 77
• Core Competencies	78 - 98
GLOSSARY OF TERMS	99
ACKNOWLEDGEMENTS	103-104

COMPETENCY STANDARDS FOR GUNSMITHING SERVICES LEVEL III

SECTION 1 DEFINITION OF QUALIFICATION

The **GUNSMITHING SERVICES LEVEL III** qualification consists of competencies that a person must achieve to demonstrate advanced gunsmithing skills, including repairing, refurbishing, and addressing complex issues with firearms. It also covers the modification and customization of both modern and classic small firearm platforms, including revolvers, pistols, sub-machine guns, rifles, and shotguns.

The units of competency comprising this qualification include the following:

Unit Code	BASIC COMPETENCIES
------------------	---------------------------

400311319	Lead workplace communication
400311320	Lead small teams
400311321	Apply critical thinking and problem-solving techniques in the workplace
400311322	Work in a diverse environment
400311323	Propose methods of applying learning and innovation in the organization
400311324	Use information systematically
400311325	Evaluate occupational safety and health work practices
400311326	Evaluate environmental work practices
400311327	Facilitate entrepreneurial skills for micro-small-medium enterprises (MSMEs)

Unit Code	COMMON COMPETENCIES
------------------	----------------------------

MEE722201	Apply safety practices
MEE722202	Interpret working drawings and sketches
MEE722203	Select/ cut workshop materials
MEE722204	Perform shop computations (Basic)
MEE722205	Measure workpiece (Basic)
MEE722206	Perform routine housekeeping
MEE722207	Perform shop computations (Intermediate)
MEE722208	Measure workpiece using angular measuring instruments
MEE722209	Perform shop computations (Advanced)
MEE722210	Measure workpiece using gages and surface texture comparator
MEE722211	Perform preventive and corrective maintenance

Unit Code	CORE COMPETENCIES
------------------	--------------------------

AB-MEE1374020722301	Demonstrate firearm safety rules and fundamentals of marksmanship
AB-MEE1374020722302	Perform preparatory activities for Gunsmithing
AB-MEE1374020722306	Repair and refurbish complex defects of firearms
AB-MEE1374020722307	Modify/ Customize firearms

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

- Master Armorer
- Gunsmith

SECTION 2 COMPETENCY STANDARD

This section gives the details of the contents of the units of competency required in **GUNSMITHING SERVICES LEVEL III**.

BASIC COMPETENCIES

UNIT OF COMPETENCY : LEAD WORKPLACE COMMUNICATION

UNIT CODE : 400311319

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to lead in the effective dissemination and discussion of ideas, information, and issues in the workplace. This includes preparation of written communication materials.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Communicate information about workplace processes	1.1 Relevant communication method is selected based on workplace procedures. 1.2 Multiple operations involving several topics/areas are communicated following enterprise requirements. 1.3 Questioning is applied to gain extra information. 1.4 Relevant sources of information are identified in accordance with workplace/client requirements. 1.5 Information is selected and organized following enterprise procedures. 1.6 Verbal and written reporting is undertaken when required. 1.7 Communication and	1.1 Organization requirements for written and electronic communication methods 1.2 Effective verbal communication methods 1.3 Business writing 1.4 Workplace etiquette	1.1 Organizing information 1.2 Conveying intended meaning 1.3 Participating in a variety of workplace discussions 1.4 Complying with organization requirements for the use of written and electronic communication methods 1.5 Effective business writing 1.6 Effective clarifying and probing skills 1.7 Effective questioning techniques

	negotiation skills are applied and maintained in all relevant situations.		(clarifying and probing)
2. Lead workplace discussions	<p>2.1 Response to workplace issues are sought following enterprise procedures.</p> <p>2.2 Response to workplace issues are provided immediately.</p> <p>2.3 Constructive contributions are made to workplace discussions on such issues as production, quality and safety.</p> <p>2.4 Goals/ objectives and action plans undertaken in the workplace are communicated promptly.</p>	<p>2.1 Organization requirements for written and electronic communication methods</p> <p>2.2 Effective verbal communication methods</p> <p>2.3 Workplace etiquette</p>	<p>2.1 Organizing information</p> <p>2.2 Conveying intended meaning</p> <p>2.3 Participating in variety of workplace discussions</p> <p>2.4 Complying with organization requirements for the use of written and electronic communication methods</p> <p>2.5 Effective clarifying and probing skills</p>
3. Identify and communicate issues arising in the workplace	<p>3.1 Issues and problems are identified as they arise.</p> <p>3.2 Information regarding problems and issues are organized coherently to ensure clear and effective communication.</p> <p>3.3 Dialogue is initiated with appropriate personnel.</p> <p>3.4 Communication problems and issues are raised as they arise.</p> <p>3.5 Identify barriers in communication to be addressed appropriately.</p>	<p>3.1 Organization requirements for written and electronic communication methods</p> <p>3.2 Effective verbal communication methods</p> <p>3.3 Workplace etiquette</p> <p>3.4 Communication problems and issues</p> <p>3.5 Barriers in communication</p>	<p>3.1 Organizing information</p> <p>3.2 Conveying intended meaning</p> <p>3.3 Participating in a variety of workplace discussions</p> <p>3.4 Complying with organization requirements for the use of written and electronic communication methods</p> <p>3.5 Effective clarifying and probing skills</p> <p>3.6 Identifying issues</p> <p>3.7 Negotiation and</p>

			communication skills
--	--	--	----------------------

RANGE OF VARIABLES

VARIABLE	RANGE
1. Methods of communication	May include: 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
2. Workplace discussions	May include: 2.1. Coordination meetings 2.2. Toolbox discussion 2.3. Peer-to-peer discussion

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 Demonstrated leadership skills in workplace communication 1.3 Made constructive contributions in workplace issues 1.4 Sought workplace issues effectively 1.5 Responded to workplace issues promptly 1.6 Presented information clearly and effectively written form 1.7 Used appropriate sources of information 1.8 Asked appropriate questions 1.9 Provided accurate information
2. Resource Implications	The following resources should be provided: 2.1 Variety of Information 2.2 Communication tools 2.3 Simulated workplace
3. Methods of Assessment	Competency in this unit may be assessed through: Case problem 3.1. Third-party report 3.2. Portfolio 3.3. Interview 3.4. Demonstration/Role-playing
4. Context for Assessment	4.1. Competency may be assessed in the workplace or in a simulated workplace environment

UNIT OF COMPETENCY : LEAD SMALL TEAMS

UNIT CODE : 400311320

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes to lead small teams including setting, maintaining and monitoring team and individual performance standards.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Provide team leadership	1.1 Work requirements are identified and presented to team members based on company policies and procedures. 1.2 Reasons for instructions and requirements are communicated to team members based on company policies and procedures. 1.3 Team members' and leaders' concerns are recognized, discussed and dealt with based on company practices.	1.1 Facilitation of Team work 1.2 Company policies and procedures relating to work performance 1.3 Performance standards and expectations 1.4 Monitoring individual's and team's performance vis a vis client's and group's expectations	1.1 Communication skills required for leading Teams 1.2 Group facilitation skills 1.3 Negotiating skills 1.4 Setting performance expectation
2. Assign responsibilities	2.1 Responsibilities are allocated having regard to the skills, knowledge and aptitude required to undertake the assigned task based on company policies. 2.2 Duties are allocated having regard to individual preference, domestic and personal considerations, whenever possible.	2.1 Work plan and procedures 2.2 Work requirements and targets 2.3 Individual and group expectations 2.4 Ways to improve group leadership and membership	2.1 Communication skills 2.2 Management skills 2.3 Negotiating skills 2.4 Evaluation skills 2.5 Identifying team member's strengths and rooms for improvement

<p>3. Set performance expectations for team members</p>	<p>3.1 Performance expectations are established based on client needs.</p> <p>3.2 Performance expectations are based on individual team member's knowledge, skills and aptitude.</p> <p>3.3 Performance expectations are discussed and disseminated to individual team members.</p>	<p>3.1 One's roles and responsibilities in the team</p> <p>3.2 Feedback giving and receiving</p> <p>3.3 Performance expectation</p>	<p>3.1 Communication skills</p> <p>3.2 Accurate empathy</p> <p>3.3 Congruence</p> <p>3.4 Unconditional positive regard</p> <p>3.5 Handling of Feedback</p>
<p>4. Supervise team performance</p>	<p>4.1 Performance is monitored based on defined performance criteria and/or assignment instruction.</p> <p>4.2 Team members are provided with feedback, positive support and advice on strategies to overcome any deficiencies based on company practices.</p> <p>4.3 Performance issues which cannot be rectified or addressed within the team are referred to appropriate personnel according to employer policy.</p> <p>4.4 Team members are kept informed of any changes in the priority allocated to assignments or tasks which 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 variables</p>	<p>4.1 Performance Coaching</p> <p>4.2 Performance management</p> <p>4.3 Performance Issues</p>	<p>4.1 Communication skills required for leading teams</p> <p>4.2 Coaching skills</p>

	team. 4.7 All relevant documentation is completed in accordance with standard operating procedures.		
--	--	--	--

RANGE OF VARIABLES

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

EVIDENCE GUIDE

<p>1. Critical aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Maintained or improved individuals and/or team performance given a variety of possible scenario 1.2 Assessed and monitored team and individual performance against set criteria 1.3 Represented concerns of a team and individual to next level of management or appropriate specialist and to negotiate on their behalf 1.4 Allocated duties and responsibilities, having regard to individual's knowledge, skills and aptitude and the needs of the tasks to be performed 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. Resource Implications</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> 2.1 Access to relevant workplace or appropriately simulated environment where assessment can take place 2.2 Materials relevant to the proposed activity or task
<p>3. Methods of Assessment</p>	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> 3.1 Written Examination 3.2 Oral Questioning 3.3 Portfolio
<p>4. Context for Assessment</p>	<ul style="list-style-type: none"> 4.1 Competency may be assessed in the actual workplace or at the designated TESDA Accredited Assessment Center.

UNIT OF COMPETENCY : APPLY CRITICAL THINKING AND PROBLEM-SOLVING TECHNIQUES IN THE WORKPLACE

UNIT CODE : 400311321

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to solve problems in the workplace including the application of problem solving techniques and to determine and resolve the root cause/s of specific problems in the workplace.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Examine specific workplace challenges	1.1 Variances are examined from normal operating parameters ; and product quality. 1.2 Extent, cause and nature of the specific problem are defined through observation, investigation and analytical techniques . 1.3 Problems are clearly stated and specified.	1.1 Competence includes a thorough knowledge and understanding of the process, normal operating parameters, and product quality to recognize nonstandard situations. 1.2 Competence to include the ability to apply and explain, enough for the 1.3 Relevant equipment and operational processes. 1.4 Enterprise goals, targets and measures. 1.5 Enterprise quality OHS and environmental requirements. 1.6 Enterprise information systems and data collation 1.7 Industry codes	1.1 Using range of analytical techniques (e.g., planning, attention, simultaneous and successive processing of information) in examining specific challenges in the workplace. 1.2 Identifying extent and causes of specific challenges in the workplace.

		and standards.	
2. Analyze the causes of specific workplace challenges	<p>2.1 Possible causes of specific problems are identified based on experience and the use of problem-solving tools / analytical techniques.</p> <p>2.2 Possible cause statements are developed based on findings.</p> <p>2.3 Fundamental causes are identified per results of investigation conducted.</p>	<p>2.1 Competence includes a thorough knowledge and understanding of the process, normal operating parameters, and product quality to recognize nonstandard 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 OSH and environmental requirements.</p> <p>2.6 Enterprise information systems and data collation.</p> <p>2.7 Industry codes and standards.</p>	<p>2.1 Using range of analytical techniques (e.g., planning, attention, simultaneous and successive processing of information) in examining specific challenges in the workplace.</p> <p>2.2 Identifying extent and causes of specific challenges in the workplace.</p> <p>2.3 Providing clear cut findings on the nature of each identified workplace challenges.</p>

<p>3. Formulate resolutions to specific workplace challenges</p>	<p>3.1 All possible options are considered for resolution of the problem.</p> <p>3.2 Strengths and weaknesses of possible options are considered.</p> <p>3.3 Corrective actions are determined to resolve the problem and possible future causes.</p> <p>3.4 Action plans are developed identifying measurable objectives, resource needs and timelines in accordance with safety and operating procedures.</p>	<p>3.1 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>3.2 Relevant equipment and operational processes</p> <p>3.3 Enterprise goals, targets and measures</p> <p>3.4 Enterprise quality OSH and environmental requirement</p> <p>3.5 Principles of decision making strategies and techniques</p> <p>3.6 Enterprise information systems and data collation</p> <p>3.7 Industry codes and standards</p>	<p>3.1 Using range of analytical techniques (e.g., planning, attention, simultaneous and successive processing of information) in examining specific challenges in the workplace.</p> <p>3.2 Identifying extent and causes of specific challenges in the workplace.</p> <p>3.3 Providing clear cut findings on the nature of each identified workplace challenges.</p> <p>3.4 Devising, communicating, implementing and evaluating strategies and techniques in addressing specific workplace challenges.</p>
--	--	---	---

<p>4. Implement action plans and communicate results</p>	<p>4.1 Action plans are implemented and evaluated.</p> <p>4.2 Results of plan implementation and recommendations are prepared.</p> <p>4.3 Recommendations are presented to appropriate personnel.</p> <p>4.4 Recommendations are followed-up, if required.</p>	<p>4.1 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>4.2 Relevant equipment and operational processes</p> <p>4.3 Enterprise goals, targets and measures</p> <p>4.4 Enterprise quality, OSH and environmental requirement</p> <p>4.5 Principles of decision making strategies and techniques</p> <p>4.6 Enterprise information systems and data collation</p> <p>4.7 Industry codes and standards</p>	<p>4.1 Using a range of analytical techniques (e.g., planning, attention, simultaneous and successive processing of information) in examining specific challenges in the workplace.</p> <p>4.2 Identifying extent and causes of specific challenges in the workplace.</p> <p>4.3 Providing clear cut findings on the nature of each identified workplace challenges.</p> <p>4.4 Devising, communicating, implementing and evaluating strategies and techniques in addressing specific workplace challenges.</p>
--	--	--	---

RANGE OF VARIABLES

VARIABLES	RANGE
1. Parameters	May include: 1.1 Processes 1.2 Procedures 1.3 Systems
2. Analytical techniques	May include: 2.1. Brainstorming 2.2. Intuitions/Logic 2.3. Cause and effect diagrams 2.4. Pareto analysis 2.5. SWOT analysis 2.6. Gantt chart, Pert CPM and graphs 2.7. Scattergrams
3. Problem	May include: 3.1. Routine, non – routine and complex workplace and quality problems 3.2. Equipment selection, availability and failure 3.3. Teamwork and work allocation problem 3.4. Safety and emergency situations and incidents 3.5. Risk assessment and management
4. Action plans	May include: 4.1. Priority requirements 4.2. Measurable objectives 4.3. Resource requirements 4.4. Timelines 4.5. Co-ordination and feedback requirements 4.6. Safety requirements 4.7. Risk assessment 4.8. Environmental requirements

EVIDENCE GUIDE

<p>1. Critical aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ol style="list-style-type: none"> 1.1. Examined specific workplace challenges. 1.2. Analyzed the causes of specific workplace challenges. 1.3. Formulated resolutions to specific workplace challenges. 1.4. Implemented action plans and communicated results on specific workplace challenges.
<p>2. Resource Implications</p>	<p>2.1. 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. A bank of scenarios / case studies / what ifs will be required as well as a bank of questions which will be used to probe the reason behind the observable action.</p>
<p>3. Methods of Assessment</p>	<p>Competency in this unit may be assessed through:</p> <ol style="list-style-type: none"> 3.1. Observation 3.2. Case Formulation 3.3. Life Narrative Inquiry 3.4. Standardized test <p>The unit will be assessed in a holistic manner as is practical and may be integrated with the assessment of other relevant units of competency. Assessment will occur over a range of situations, which will include disruptions to normal, smooth operation. Simulation may be required to allow for timely assessment of parts of this unit of competency. Simulation should be based on the actual workplace and will include walk through of the relevant competency components.</p> <p>These assessment activities should include a range of problems, including new, unusual and improbable situations that may have happened.</p>
<p>4. Context for Assessment</p>	<p>In all workplace, it may be appropriate to assess this unit concurrently with relevant teamwork or operation units.</p>

UNIT OF COMPETENCY : WORK IN A DIVERSE ENVIRONMENT

UNIT CODE : 400311322

UNIT DESCRIPTOR : This unit covers the outcomes required to work effectively in a workplace characterized by diversity in terms of religions, beliefs, races, ethnicities and other differences.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Develop an individual's cultural awareness and sensitivity	1.1 Individual differences with clients, customers and fellow workers are recognized and respected in accordance with enterprise policies and core values. 1.2 Differences are responded to in a sensitive and considerate manner 1.3 Diversity is accommodated using appropriate verbal and nonverbal communication.	1.1 Understanding cultural diversity in the workplace 1.2 Norms of behavior for interacting and dialogue with specific groups (e. g., Muslims and other non-Christians, non-Catholics, tribes/ethnic groups, foreigners) 1.3 Different methods of verbal and nonverbal communication in a multicultural setting	1.1 Applying cross-cultural communication skills (i.e. different business customs, beliefs, communication strategies) 1.2 Showing affective skills – establishing rapport and empathy, understanding, etc. 1.3 Demonstrating openness and flexibility in communication 1.4 Recognizing diverse groups in the workplace and community as defined by divergent culture, religion, traditions and practices

<p>2. Work effectively in an environment that acknowledges and values cultural diversity</p>	<p>2.1 Knowledge, skills and experiences of others are recognized and documented in relation to team objectives.</p> <p>2.2 Fellow workers are encouraged to utilize and share their specific qualities, skills or backgrounds with other team members and clients to enhance work outcomes.</p> <p>2.3 Relations with customers and clients are maintained to show that diversity is valued by the business.</p>	<p>2.1 Value of diversity in the economy and society in terms of Workforce development</p> <p>2.2 Importance of inclusiveness in a diverse environment</p> <p>2.3 Shared vision and understanding of and commitment to team, departmental, and organizational goals and objectives</p> <p>2.4 Strategies for customer service excellence</p>	<p>2.1 Demonstrating cross-cultural communication skills and active listening</p> <p>2.2 Recognizing diverse groups in the workplace and community as defined by divergent culture, religion, traditions and practices</p> <p>2.3 Demonstrating collaboration skills</p> <p>2.4 Exhibiting customer service excellence</p>
<p>3. Identify common issues in a multicultural and diverse environment</p>	<p>3.1 Diversity-related conflicts within the workplace are effectively addressed and resolved.</p> <p>3.2 Discriminatory behaviors towards customers/ stakeholders are minimized and addressed accordingly.</p> <p>3.3 Change management policies are in place within the organization.</p>	<p>3.1 Value, and leverage of cultural diversity</p> <p>3.2 Inclusivity and conflict resolution</p> <p>3.3 Workplace harassment</p> <p>3.4 Change management and ways to overcome resistance to change</p> <p>3.5 Advanced strategies for customer service excellence</p>	<p>3.1 Addressing diversity-related conflicts in the workplace</p> <p>3.2 Eliminating discriminatory behavior towards customers and coworkers</p> <p>3.3 Utilizing change management policies in the workplace</p>

RANGE OF VARIABLES

VARIABLE	RANGE
1. Diversity	<p>This refers to diversity in both the workplace and the community and may include divergence in:</p> <ul style="list-style-type: none"> 1.1 Religion 1.2 Ethnicity, race or nationality 1.3 Culture 1.4 Gender, age or personality 1.5 Educational background
2. Diversity-related conflicts	<p>May include conflicts that result from:</p> <ul style="list-style-type: none"> 2.1 Discriminatory behaviors 2.2 Differences of cultural practices 2.3 Differences of belief and value systems 2.4 Gender-based violence 2.5 Workplace bullying 2.6 Corporate jealousy 2.7 Language barriers 2.8 Individuals being differently-abled persons 2.9 Ageism (negative attitude and behavior towards old people)

EVIDENCE GUIDE

1. Critical aspects of Competency	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Adjusted language and behavior as required by interactions with diversity 1.2 Identified and respected individual differences in colleagues, clients and customers 1.3 Applied relevant regulations, standards and codes of practice
2. Resource Implications	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> 2.1 Access to workplace and resources 2.2 Manuals and policies on Workplace Diversity
3. Methods of Assessment	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> 3.1 Demonstration or simulation with oral questioning 3.2 Group discussions and interactive activities 3.3 Case studies/problems involving workplace diversity issues 3.4 Third-party report 3.5 Written examination 3.6 Role Plays
4. Context for Assessment	<p>Competency assessment may occur in workplace or any appropriately simulated environment</p>

UNIT OF COMPETENCY : PROPOSE METHODS OF APPLYING LEARNING AND INNOVATION IN THE ORGANIZATION

UNIT CODE : 400311323

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to assess general obstacles in the application of learning and innovation in the organization and to propose practical methods of such in addressing organizational challenges.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Assess work procedures, processes and systems in terms of innovative practices	1.1 Reasons for innovation are incorporated to work procedures. 1.2 Models of innovation are researched. 1.3 Gaps or barriers to innovation in one's work area are analyzed. 1.4 Staff who can support and foster innovation in the work procedure are identified.	1.1 Seven habits of highly effective people. 1.2 Character strengths that foster innovation and learning (Christopher Peterson and Martin Seligman, 2004) 1.3 Five minds of the future concepts (Gardner, 2007). 1.4 Adaptation concepts in neuroscience (Merzenich, 2013). 1.5 Transtheoretical model of behavior change (Prochaska, DiClemente, & Norcross, 1992).	1.1 Demonstrating collaboration and networking skills. 1.2 Applying basic research and evaluation skills 1.3 Generating insights on how to improve organizational procedures, processes and systems through innovation.

<p>2. Generate practical action plans for improving work procedures, processes</p>	<p>2.1 Ideas for innovative work procedures to foster innovation using individual and group techniques are conceptualized.</p> <p>2.2 Range of ideas with other team members and colleagues are evaluated and discussed.</p> <p>2.3 Work procedures and processes subject to change are selected based on workplace requirements (feasible and innovative).</p> <p>2.4 Practical action plans are proposed to facilitate simple changes in the work procedures, processes and systems.</p> <p>2.5 Critical inquiry is applied and used to facilitate discourse on adjustments in the simple work procedures, processes and systems.</p>	<p>2.1 Seven habits of highly effective people.</p> <p>2.2 Character strengths that foster innovation and learning (Christopher Peterson and Martin Seligman, 2004)</p> <p>2.3 Five minds of the future concepts (Gardner, 2007).</p> <p>2.4 Adaptation concepts in neuroscience (Merzenich, 2013).</p> <p>2.5 Transtheoretical model of behavior change (Prochaska, DiClemente, & Norcross, 1992).</p>	<p>2.1 Assessing readiness for change on simple work procedures, processes and systems.</p> <p>2.2 Generating insights on how to improve organizational procedures, processes and systems through innovation.</p> <p>2.3 Facilitating action plans on how to apply innovative procedures in the organization.</p>
--	---	---	---

<p>3. Evaluate the effectiveness of the proposed action plans</p>	<p>3.1 Work structure is analyzed to identify the impact of the new work procedures.</p> <p>3.2 Co-workers/key personnel are consulted to know who will be involved with or affected by the work procedures.</p> <p>3.3 Work instruction operational plan of the new work procedure is developed and evaluated.</p> <p>3.4 Feedback and suggestions are recorded.</p> <p>3.5 Operational plan is updated.</p> <p>3.6 Results and impact on the developed work instructions are reviewed.</p> <p>3.7 Results of the new work procedure are evaluated.</p> <p>3.8 Adjustments are recommended based on results gathered.</p>	<p>3.1 Five minds of the future concepts (Gardner, 2007).</p> <p>3.2 Adaptation concepts in neuroscience (Merzenich, 2013).</p> <p>3.3 Transtheoretical model of behavior change (Prochaska, DiClemente, & Norcross, 1992).</p>	<p>3.1 Generating insights on how to improve organizational procedures, processes and systems through innovation.</p> <p>3.2 Facilitating action plans on how to apply innovative procedures in the organization.</p> <p>3.3 Communicating results of the evaluation of the proposed and implemented changes in the workplace procedures and systems.</p> <p>3.4 Developing action plans for continuous improvement on the basic systems, processes and procedures in the organization.</p>
---	--	---	---

RANGE OF VARIABLES

VARIABLE	RANGE
1. Reasons	May include: 1.1 Strengths and weaknesses of the current systems, processes and procedures. 1.2 Opportunities and threats of the current systems, processes and procedures.
2. Models of innovation	May include: 2.1 Seven habits of highly effective people. 2.2 Five minds of the future concepts (Gardner, 2007). 2.3 Neuroplasticity and adaptation strategies.
3. Gaps or barriers	May include: 3.1 Machine 3.2 Manpower 3.3 Methods 3.4 Money
4. Critical Inquiry	May include: 4.1 Preparation. 4.2 Discussion. 4.3 Clarification of goals. 4.4 Negotiate towards a Win-Win outcome. 4.5 Agreement. 4.6 Implementation of a course of action. 4.7 Effective verbal communication. See our pages: Verbal Communication and Effective Speaking. 4.8 Listening. 4.9 Reducing misunderstandings is a key part of effective negotiation. 4.10 Rapport Building. 4.11 Problem Solving. 4.12 Decision Making. 4.13 Assertiveness. 4.14 Dealing with Difficult Situations.

EVIDENCE GUIDE

<p>1. Critical aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ol style="list-style-type: none"> 1.1 Established the reasons why innovative systems are required 1.2 Established the goals of a new innovative system 1.3 Analyzed current organizational systems to identify gaps and barriers to innovation. 1.4 Assessed work procedures, processes and systems in terms of innovative practices. 1.5 Generate practical action plans for improving work procedures, and processes. 1.6 Reviewed the trial innovative work system and adjusted, to reflect evaluation feedback, knowledge management systems and future planning. 1.7 Evaluated the effectiveness of the proposed action plans.
<p>2. Resource Implications</p>	<p>The following resources should be provided:</p> <ol style="list-style-type: none"> 2.1 Pens, papers and writing implements. 2.2 Cartolina. 2.3 Manila papers.
<p>3. Methods of Assessment</p>	<p>Competency in this unit may be assessed through:</p> <ol style="list-style-type: none"> 3.1 Psychological and behavioral Interviews. 3.2 Performance Evaluation. 3.3 Life Narrative Inquiry. 3.4 Review of portfolios of evidence and third-party workplace reports of on-the-job performance. 3.5 Sensitivity analysis. 3.6 Organizational analysis. 3.7 Standardized assessment of character strengths and virtues applied.
<p>4. Context for Assessment</p>	<ol style="list-style-type: none"> 4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions.

UNIT OF COMPETENCY : USE INFORMATION SYSTEMATICALLY

UNIT CODE : 400311324

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to use technical information systems, apply information technology (IT) systems and edit, format & check information.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Use technical information	1.1 Information are collated and organized into a suitable form for reference and use. 1.2 Stored information is classified so that it can be quickly identified and retrieved when needed. 1.3 Guidance are advised and offered to people who need to find and use information.	1.1 Application in collating information 1.2 Procedures for inputting, maintaining and archiving information 1.3 Guidance to people who need to find and use information 1.4 Organize information 1.5 Classify stored information for identification and retrieval 1.6 Operate the technical information system by using agreed procedures	1.1 Collating information 1.2 Operating appropriate and valid procedures for inputting, maintaining and archiving information 1.3 Advising and offering guidance to people who need to find and use information 1.4 Organizing information into a suitable form for reference and use 1.5 Classifying stored information for identification and retrieval 1.6 Operating the technical information system by using agreed procedures

<p>2. Apply information technology (IT)</p>	<p>2.1 Technical information system is operated using agreed procedures.</p> <p>2.2 Appropriate and valid procedures are operated for inputting, maintaining and archiving information.</p> <p>2.3 Software required are utilized to execute the project activities.</p> <p>2.4 Information and data obtained are handled, edited, formatted and checked from a range of internal and external sources.</p> <p>2.5 Information is extracted, entered, and processed to produce the outputs required by customers.</p> <p>2.6 Own skills and understanding are shared to help others.</p> <p>2.7 Specified security measures are implemented to protect the confidentiality and integrity of project data held in IT systems.</p>	<p>2.1 Attributes and limitations of available software tools</p> <p>2.2 Procedures and work instructions for the use of IT</p> <p>2.3 Operational requirements for IT systems</p> <p>2.4 Sources and flow paths of data</p> <p>2.5 Security systems and measures that can be used</p> <p>2.6 Extract data and format reports</p> <p>2.7 Methods of entering and processing information</p> <p>2.8 WWW enabled applications</p>	<p>2.1 Identifying attributes and limitations of available software tools</p> <p>2.2 Using procedures and work instructions for the use of IT</p> <p>2.3 Describing operational requirements for IT systems</p> <p>2.4 Identifying sources and flow paths of data</p> <p>2.5 Determining security systems and measures that can be used</p> <p>2.6 Extracting data and format reports</p> <p>2.7 Describing methods of entering and processing information</p> <p>2.8 Using WWW applications</p>
<p>3. Edit, format and check information</p>	<p>3.1 Basic editing techniques are used.</p> <p>3.2 Accuracy of documents are checked.</p> <p>3.3 Editing and formatting tools and techniques are used for more complex documents.</p> <p>3.4 Proof reading techniques is used to check that documents look professional.</p>	<p>3.1 Basic file-handling techniques</p> <p>3.2 Techniques in checking documents</p> <p>3.3 Techniques in editing and formatting</p> <p>3.4 Proofreading techniques</p>	<p>3.1 Using basic file-handling techniques is used for the software</p> <p>3.2 Using different techniques in checking documents</p> <p>3.3 Applying editing and formatting techniques</p> <p>3.4 Applying proofreading techniques</p>

RANGE OF VARIABLES

VARIABLE	RANGE
1. Information	May include: 1.1. Property 1.2. Organizational 1.3. Technical reference
2. Technical information	May include: 2.1. paper based 2.2. electronic
3. Software	May include: 3.1. spreadsheets 3.2. databases 3.3. word processing 3.4. presentation
4. Sources	May include: 4.1. other IT systems 4.2. manually created 4.3. within own organization 4.4. outside own organization 4.5. geographically remote
5. Customers	May include: 5.1 colleagues 5.2 company and project management 5.3 clients
6. Security measures	May include: 6.1. access rights to input; 6.2. passwords; 6.3. access rights to outputs; 6.4. data consistency and back-up; 6.5. recovery plans

EVIDENCE GUIDE

1. Critical aspects of Competency	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1. Used technical information systems and information technology 1.2. Applied information technology (IT) systems 1.3. Edited, formatted and checked information
2. Resource Implications	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> 2.1. Computers 2.2. Software and IT system
3. Methods of Assessment	<p>Competency in this unit should be assessed through:</p> <ul style="list-style-type: none"> 3.1. Direct Observation 3.2. Oral interview and written test
4. Context for Assessment	<ul style="list-style-type: none"> 4.1. Competency may be assessed individually in the actual workplace or through accredited institution

UNIT OF COMPETENCY : EVALUATE OCCUPATIONAL SAFETY AND HEALTH WORK PRACTICES

UNIT CODE : 400311325

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to interpret Occupational Safety and Health practices, set OSH work targets, and evaluate effectiveness of Occupational Safety and Health work instructions.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Interpret Occupational Safety and Health practices	1.1 OSH work practices issues are identified relevant to work requirements. 1.2 OSH work standards and procedures are determined based on applicability to the nature of work. 1.3 Gaps in work practices are identified related to relevant OSH work standards.	1.1 OSH work practices issues 1.2 OSH work standards 1.3 General OSH principles and legislations 1.4 Company/ workplace policies/ guidelines 1.5 Standards and safety requirements of work process and procedures	1.1 Communication skills 1.2 Interpersonal skills 1.3 Critical thinking skills 1.4 Observation skills
2. Set OSH work targets	2.1 Relevant work information is gathered necessary to determine OSH work targets. 2.2 OSH Indicators based on gathered information are agreed upon to measure effectiveness of workplace OSH policies and procedures. 2.3 Agreed OSH indicators are endorsed for approval from appropriate personnel. 2.4 OSH work	2.1 OSH work targets 2.2 OSH Indicators 2.3 OSH work instructions 2.4 Safety and health requirements of tasks 2.5 Workplace guidelines on providing feedback on OSH and security concerns 2.6 OSH regulations Hazard control	2.1 Communication skills 2.2 Collaborating skills 2.3 Critical thinking skills 2.4 Observation skills

	instructions are received in accordance with workplace policies and procedures*	procedures 2.7 OSH trainings relevant to work	
3. Evaluate effectiveness of Occupational Safety and Health work instructions	<p>3.1 OSH Practices are observed based on workplace standards.</p> <p>3.2 Observed OSH practices are measured against approved OSH metrics.</p> <p>3.3 Findings regarding effectiveness are assessed and gaps identified are implemented based on OSH work standards.</p>	<p>3.1 OSH Practices</p> <p>3.2 OSH metrics</p> <p>3.3 OSH Evaluation Techniques</p> <p>3.4 OSH work standards</p>	<p>3.1 Critical thinking skills</p> <p>3.2 Evaluating skills</p>

RANGE OF VARIABLES

VARIABLE	RANGE
1. OSH Work Practices Issues	May include: <ul style="list-style-type: none"> 1.1 Workers' experience/observance on presence of work hazards 1.2 Unsafe/unhealthy administrative arrangements (prolonged work hours, no break-time, constant overtime, scheduling of tasks) 1.3 Reasons for compliance/non-compliance to use of PPEs or other OSH procedures/policies/guidelines
2. OSH Indicators	May include: <ul style="list-style-type: none"> 2.1 Increased of incidents of accidents, injuries 2.2 Increased occurrence of sickness or health complaints/symptoms 2.3 Common complaints of workers' related to OSH 2.4 High absenteeism for work-related reasons
3. OSH Work Instructions	May include: <ul style="list-style-type: none"> 3.1 Preventive and control measures, and targets 3.2 Eliminate the hazard (i.e., get rid of the dangerous machine) 3.3 Isolate the hazard (i.e. keep the machine in a closed room and operate it remotely; barricade an unsafe area off) 3.4 Substitute the hazard with a safer alternative (i.e., replace the machine with a safer one) 3.5 Use administrative controls to reduce the risk (i.e. give trainings on how to use equipment safely; OSH-related topics, issue warning signages, rotation/shifting work schedule) 3.6 Use engineering controls to reduce the risk (i.e. use safety guards to machine) 3.7 Use personal protective equipment 3.8 Safety, Health and Work Environment Evaluation 3.9 Periodic and/or special medical examinations of workers
4. OSH metrics	May include: <ul style="list-style-type: none"> 4.1 Statistics on incidence of accident and injuries 4.2 Morbidity (Type and Number of Sickness) 4.3 Mortality (Cause and Number of Deaths) 4.4 Accident Rate

EVIDENCE GUIDE

<p>1. Critical aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1. Identify OSH work practices issues relevant to work requirements 1.2. Identify gaps in work practices related to relevant OSH work standards 1.3. Agree upon OSH Indicators based on gathered information to measure effectiveness of workplace OSH policies and procedures 1.4. Receive OSH work instructions in accordance with workplace policies and procedures 1.5. Compare Observed OSH practices with against approved OSH work instructions 1.6. Assess findings regarding effectiveness based on OSH work standards
<p>2. Resource Implications</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> 2.1 Facilities, materials, tools and equipment necessary for the activity
<p>3. Methods of Assessment</p>	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> 3.1 Observation/Demonstration with oral questioning 3.2 Third party report 3.3 Written exam
<p>4. Context for Assessment</p>	<ul style="list-style-type: none"> 4.1 Competency may be assessed in the work place or in a simulated work place setting

UNIT OF COMPETENCY : **EVALUATE ENVIRONMENTAL WORK PRACTICES**

UNIT CODE : **400311326**

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitude to interpret environmental Issues, establish targets to evaluate environmental practices and evaluate effectiveness of environmental practices.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Interpret environmental practices, policies and procedures	1.1 Environmental work practices issues are identified relevant to work requirements. 1.2 Environmental Standards and Procedures nature of work are determined based on Applicability to nature of work. 1.3 Gaps in work practices related to Environmental Standards and Procedures are identified.	1.1 Environmental Issues 1.2 Environmental Work Procedures 1.3 Environmental Laws 1.4 Environmental Hazardous and Non-Hazardous Materials 1.5 Environmental required license, registration or certification	1.1 Analyzing Environmental Issues and Concerns 1.2 Critical thinking 1.3 Problem Solving 1.4 Observation Skills
2. Establish targets to evaluate environmental practices	2.1 Relevant information is gathered necessary to determine environmental work targets. 2.2 Environmental Indicators based on gathered information are set to measure environmental work targets. 2.3 Indicators are verified with appropriate personnel.	2.1 Environmental indicators 2.2 Relevant environment personnel or expert 2.3 Relevant environmental trainings and seminars	2.1 Investigative Skills 2.2 Critical thinking 2.3 Problem Solving 2.4 Observation Skills

<p>3. Evaluate effectiveness of environmental practices</p>	<p>3.1 Work environmental practices are recorded based on workplace standards.</p> <p>3.2 Recorded work environmental practices are compared against planned indicators.</p> <p>3.3 Findings regarding effectiveness are assessed and gaps identified are implemented based on environment work standards and procedures.</p> <p>3.4 Results of environmental assessment are conveyed to appropriate personnel.</p>	<p>3.1 Environmental Practices</p> <p>3.2 Environmental Standards and Procedures</p>	<p>3.1 Documentation and Record Keeping Skills</p> <p>3.2 Critical thinking</p> <p>3.3 Problem Solving</p> <p>3.4 Observation Skills</p>
---	---	--	--

RANGE OF VARIABLES

VARIABLE	RANGE
1. Environmental Practices Issues	May include: 1.1 Water Quality 1.2 National and Local Government Issues 1.3 Safety 1.4 Endangered Species 1.5 Noise 1.6 Air Quality 1.7 Historic 1.8 Waste 1.9 Cultural
2. Environmental Indicators	May include: 2.1 Noise level 2.2 Lighting (Lumens) 2.3 Air Quality - Toxicity 2.4 Thermal Comfort 2.5 Vibration 2.6 Radiation 2.7 Quantity of the Resources 2.8 Volume

EVIDENCE GUIDE

<p>1. Critical Aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ol style="list-style-type: none"> 1.1. Identified environmental issues relevant to work requirements. 1.2. Identified gaps in work practices related to Environmental Standards and Procedures. 1.3. Gathered relevant information necessary to determine environmental works targets. 1.4. Set environmental indicators based on gathered information to measure environmental work targets. 1.5. Recorded work environmental practices are recorded based on workplace standards. 1.6. Conveyed results of environmental assessment to appropriate personnel
<p>2. Resource Implications</p>	<p>The following resources should be provided:</p> <ol style="list-style-type: none"> 2.1. Workplace/Assessment location 2.2. Legislation, policies, procedures, protocols and local ordinances relating to environmental protection 2.3. Case studies/scenarios relating to environmental protection
<p>3. Methods of Assessment</p>	<p>Competency in this unit may be assessed through:</p> <ol style="list-style-type: none"> 3.1. Written/Oral Examination 3.2. Interview/Third Party Reports 3.3. Portfolio (citations/awards from GOs and NGOs, certificate of training – local and abroad) 3.4. Simulations and role-play
<p>4. Context for Assessment</p>	<p>4.1 Competency may be assessed in the actual workplace or at the designated TESDA center.</p>

UNIT OF COMPETENCY : FACILITATE ENTREPRENEURIAL SKILLS FOR MICRO- SMALL-MEDIUM ENTERPRISES (MSMEs)

UNIT CODE : 400311327

UNIT DESCRIPTOR : This unit covers the outcomes required to build, operate and grow a micro/small-scale enterprise.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Develop and maintain micro-small medium enterprise (MSMEs) skills in the organization	1.1 Appropriate business strategies are determined and set for the enterprise based on the current and emerging business environment. 1.2 Business operations are monitored and controlled following established procedures. 1.3 Quality assurance measures are implemented consistently. 1.4 Good relations are maintained with staff/workers. 1.5 Policies and procedures on occupational safety and health and environmental concerns are constantly observed.	1.1 Business models and strategies 1.2 Types and categories of businesses 1.3 Business operation 1.4 Basic Bookkeeping 1.5 Business internal controls 1.6 Basic quality control and assurance concepts 1.7 Government and regulatory processes	1.1 Basic bookkeeping/ accounting skills 1.2 Communication skills 1.3 Building relations with customer and employees 1.4 Building competitive advantage of the enterprise

<p>2. Establish and maintain client-base/ market</p>	<p>2.1 Good customer relations are maintained</p> <p>2.2 New customers and markets are identified, explored and reached out to.</p> <p>2.3 Promotions/Incentives are offered to loyal customers.</p> <p>2.4 Additional products and services are evaluated and tried where feasible.</p> <p>2.5 Promotional/ advertising initiatives are carried out where necessary and feasible.</p>	<p>2.1 Public relations concepts</p> <p>2.2 Basic product promotion strategies</p> <p>2.3 Basic market and feasibility studies</p> <p>2.4 Basic business ethics</p>	<p>2.1 Building customer relations</p> <p>2.2 Individual marketing skills</p> <p>2.3 Using basic advertising (posters/ tarpaulins, flyers, social media, etc.)</p>
<p>3. Apply budgeting and financial management skills</p>	<p>3.1 Enterprise is built up and sustained through judicious control of cash flows.</p> <p>3.2 Profitability of enterprise is ensured through appropriate internal controls.</p> <p>3.3 Unnecessary or lower-priority expenses and purchases are avoided.</p>	<p>3.1 Cash flow management</p> <p>3.2 Basic financial management</p> <p>3.3 Basic financial accounting</p> <p>3.4 Business internal controls</p>	<p>3.1 Setting business priorities and strategies</p> <p>3.2 Interpreting basic financial statements</p> <p>3.3 Preparing business plans</p>

RANGE OF VARIABLES

VARIABLE	RANGE
1. Business strategies	May include: 1.1. Developing/Maintaining niche market 1.2. Use of organic/healthy ingredients 1.3. Environment-friendly and sustainable practices 1.4. Offering both affordable and high-quality products and services 1.5. Promotion and marketing strategies (e. g., online marketing)
2. Business operations	May include: 2.1 Purchasing 2.2 Accounting/Administrative work 2.3 Production/Operations/Sales
3. Internal controls	May include: 3.1 Accounting systems 3.2 Financial statements/reports 3.3 Cash management
4. Promotional/Advertising initiatives	May include: 4.1 Use of tarpaulins, brochures, and/or flyers 4.2 Sales, discounts and easy payment terms 4.3 Use of social media/Internet 4.4 "Service with a smile" 4.5 Extra attention to regular customers

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Demonstrated basic entrepreneurial skills 1.2 Demonstrated ability to conceptualize and plan a micro/small enterprise 1.3 Demonstrated ability to manage/operate a micro/small- scale business
2. Resource Implications	The following resources should be provided: 2.1 Simulated or actual workplace 2.2 Tools, materials and supplies needed to demonstrate the required tasks 2.3 References and manuals
3. Methods of Assessment	Competency in this unit may be assessed through: 3.1 Written examination 3.2 Demonstration/observation with oral questioning 3.3 Portfolio assessment with interview 3.4 Case problems
4. Context of Assessment	4.1 Competency may be assessed in workplace or in a simulated workplace setting 4.2 Assessment shall be observed while tasks are being undertaken whether individually or in-group

COMMON COMPETENCIES

UNIT OF COMPETENCY : APPLY SAFETY PRACTICES

UNIT CODE : MEE722201

UNIT DESCRIPTOR : This unit covers the competencies required to apply safety practices in the workplace.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Identify hazards	1.1 Hazards are identified correctly in accordance with OHS principles. 1.2 Safety signs and symbols are identified and adhered to.	1.1 Shop safety signs, symbols and alarms 1.2 Safety precautionary measures 1.3 Housekeeping 1.4 Machine tools 1.5 First aid 1.6 Engineering materials 1.7 Fire extinguishers	1.1 Operating machine tools 1.2 Handling tools and materials 1.3 Communicating with superiors and co-workers 1.4 Interpreting instructions

<p>2. Use protective clothing and device</p>	<p>2.1 Appropriate protective clothing and devices correctly selected and used in accordance with OHS requirements or industry/company policy</p>	<p>2.1 Shop safety signs, symbols and alarms 2.2 Safety precautionary measures 2.3 Housekeeping 2.4 Machine tools 2.5 First aid 2.6 Engineering materials 2.7 Fire extinguishers</p>	<p>2.1 Operating machine tools 2.2 Handling tools and materials 2.3 Communicating with superiors and co-workers 2.4 Interpreting instructions</p>
<p>3. Perform safe handling of tools, equipment and materials</p>	<p>3.1 Safety procedures for pre-use check and operation of tools and equipment followed in accordance with industry/ company policies. 3.2 Tools, equipment and materials handled safely in accordance with OHS requirements and industry/ company policies.</p>	<p>3.1 Shop safety signs, symbols and alarms 3.2 Safety precautionary measures 3.3 Housekeeping 3.4 Machine tools 3.5 First aid 3.6 Engineering materials 3.7 Fire extinguishers</p>	<p>3.1 Operating machine tools 3.2 Handling tools and materials 3.3 Communicating with superiors and coworkers 3.4 Interpreting instructions</p>

<p>4. Perform first aid</p>	<p>4.1 First aid treatment of injuries are carried out according to recommended procedures.</p>	<p>4.1 Shop safety signs, symbols and alarms 4.2 Safety precautionary measures 4.3 Housekeeping 4.4 Machine tools 4.5 First aid 4.6 Engineering materials 4.7 Fire extinguishers</p>	<p>4.1 Operating machine tools 4.2 Handling tools and materials 4.3 Communicating with superiors and coworkers 4.4 Interpreting instructions</p>
<p>5. Use fire extinguisher</p>	<p>5.1 Fire extinguisher selected and operated correctly according to the type of fire.</p>	<p>5.1 Shop safety signs, symbols and alarms 5.2 Safety precautionary measures 5.3 Housekeeping 5.4 Machine tools 5.5 First aid 5.6 Engineering materials 5.7 Fire extinguishers</p>	<p>5.1 Operating machine tools 5.2 Handling tools and materials 5.3 Communicating with superiors and coworkers 5.4 Interpreting instructions</p>

RANGE OF VARIABLES

VARIABLE	RANGE
1. Hazards	1.1 Cluttered tools and materials 1.2 Slippery floors (caused by oil, grease or any liquid) 1.3 Exposed electrical wires 1.4 Sharp edges 1.5 Machine without guards or with exposed moving parts 1.6 Uncollected chips or other wastes etc.
2. Protective clothing and devices	Protective clothing and devices may include but is not limited to: 2.1 safety glasses/goggles 2.2 safety shoes 2.3 overalls 2.4 cap
3. Injuries	Injuries may include: 3.1 burns/scalds 3.2 fractures 3.3 cuts and abrasions 3.4 poisoning 3.5 foreign bodies in the eye 3.6 concussion 3.7 shock
4. Type of fires	Fires involving or caused by: 4.1 common combustibles (wood, cloth, paper, rubber and plastic) 4.2 flammable liquids (gasoline, oil, solvents, paints, etc.) 4.3 energized electrical equipment (wiring, fuse boxes, circuit breakers, appliances, etc.) 4.4 combustible metals (magnesium, sodium, etc.)

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 identified hazardous area 1.2 used protective clothing and devices 1.3 handled tools, equipment and materials properly 1.4 performed first aid 1.5 used fire extinguishers.
2.Resource Implications	The following resources MUST be provided 2.1 Tools, equipment and facilities appropriate to processes or activity 2.2 Materials relevant to the proposed activity
3. Methods of Assessment	Competency may be assessed through: 3.1 Demonstration 3.2 Written or oral short answer questions 3.3 Practical exercises
4. Context of Assessment	Competency may be assessed in the workplace or in simulated workplace environment

**UNIT OF
COMPETENCY**

: INTERPRET WORKING DRAWINGS AND SKETCHES

UNIT CODE : **MEE722202**

UNIT DESCRIPTOR : This unit covers the competencies required to read, prepare, and interpret drawings and sketches.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Interpret technical drawing	1.1 Components, assemblies or objects recognized as required. Dimensions identified as appropriate. Instructions identified and followed as required. Material requirements identified as required. Symbols recognized as appropriate in the drawing . Tolerance , limits and fits identified in the drawing.	1.1 Alphabet of lines 1.2 Projections 1.3 Drawing symbols 1.4 Dimensioning techniques 1.5 Tolerance, limits and fits 1.6 Engineering materials 1.7 Drawing tools and supplies	1.1 Handling tools and drawing instruments 1.2 Using measuring instruments
2. Prepare freehand sketch of parts	2.1 Sketch drawn correctly and appropriately. 2.2 Sketch depicted objects or part appropriately. 2.3 Dimensions indicated in sketch are clear and correct. 2.4 Instructions included in the sketch are clear and correct. 2.5 Base line or datum points indicated as required.	2.1 Alphabet of lines 2.2 Projections 2.3 Drawing symbols 2.4 Dimensioning techniques 2.5 Tolerance, limits and fits 2.6 Engineering materials 2.7 Drawing tools and supplies	2.1 Handling tools and drawing instruments 2.2 Using measuring instruments
3. Interpret	3.1 Components,	3.1 Alphabet of lines	3.1 Handling tools

details from freehand sketch	assemblies or objects recognized as required. 3.2 Dimensions identified as appropriate. 3.3 Instructions identified and followed as required. 3.4 Material requirements identified as required. 3.5 Symbols recognized as appropriate in the drawing.	3.2 Projections 3.3 Drawing symbols 3.4 Dimensioning techniques 3.5 Tolerance, limits and fits 3.6 Engineering materials 3.7 Drawing tools and supplies	and drawing instruments 3.2 Using measuring instruments
------------------------------	---	--	--

RANGE OF VARIABLES

VARIABLE	RANGE
1. Drawing	1.1 Drawing technique include: 1.1.1 Perspective 1.1.2 Exploded view 1.1.3 Hidden view technique 1.2 Projections: 1.2.1 First angle projection 1.2.2 Third angle projection
2. Tolerance	2.1 General tolerance 2.2 Angular tolerance 2.3 Geometric tolerance

EVIDENCE GUIDE

1. Critical Aspects of Competency	<p>Assessment requires that the candidate:</p> <ul style="list-style-type: none"> 1.1 Interpreted technical drawing 1.2 Prepared sketches 1.3 Interpreted sketches.
2. Resource Implications	<p>The following resources MUST be provided:</p> <ul style="list-style-type: none"> 2.1 Drafting room/facilities and drafting instruments and supplies appropriate to the activity 2.2 Measuring tools 2.3 Drawings, sketches or blueprint 2.4 Specimen parts/components
3	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> 3.1 direct observation 3.2 written or oral short answer questions 3.3 demonstration 3.4 project/work sample 3.5 portfolio
4. Context of Assessment	<p>Competency may be assessed in the workplace or in simulated workplace environment</p>

**UNIT OF
COMPETENCY**

: SELECT/ CUT WORKSHOP MATERIALS

UNIT CODE : **MEE722203**

UNIT DESCRIPTOR : This unit covers the skills and knowledge required to interpret, select and cut workshop materials.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Determine requirement	1.1 Plans/ drawings are interpreted to produce component to specification 1.2 Sequence of operation is determined to produce component to specification	1.1 Shop safety practices 1.1.1 Safe working habits 1.1.2 Safe handling of tools, equipment and materials 1.2 Blueprint reading 1.2.1 Standard drawing scales, symbols and abbreviations 1.2.2 Assembly and details of drawing 1.2.3. Dimensions 1.3 Measurement 1.3.1 Linear measuring tools 1.4 Materials and related science 1.4.1 Classification and mechanical properties of engineering materials	1.1 Selecting materials 1.2 Using measuring tools 1.3 Operating power hacksaw
2. Select and measure	2.1 Materials are selected according	2.1 Shop safety	2.1 Selecting

<p>materials</p>	<p>to the requirement of the operation</p> <p>2.2 Materials are measured to required level of accuracy using measuring tools</p> <p>2.3 Measuring tools are used according to manufacturers specification.</p>	<p>practices</p> <p>2.1.1 Safe working habits</p> <p>2.1.2 Safe handling of tools, equipment and materials</p> <p>2.2 Blueprint reading</p> <p>2.2.1 Standard drawing scales, symbols and abbreviations</p> <p>2.2.2 Assembly and details of drawing</p> <p>2.2.3. Dimensions</p> <p>2.3 Measurement</p> <p>2.3.1 Linear measuring tools</p> <p>2.4 Materials and related science</p> <p>2.4.1 Classification and mechanical properties of engineering materials</p>	<p>materials</p> <p>2.2 Using measuring tools</p> <p>2.3 Operating power hacksaw</p>
------------------	--	--	--

3. Cut materials	<p>3.1 Materials are cut according to plans/drawing instruction</p> <p>3.2 Cutting tools/equipment are used based on manufacturers specification, appropriate techniques or the safety procedure .</p>	<p>3.1 Shop safety practices</p> <p>3.1.1 Safe working habits</p> <p>3.1.2 Safe handling of tools, equipment and materials</p> <p>3.2 Blueprint reading</p> <p>3.2.1 Standard drawing scales, symbols and abbreviations</p> <p>3.2.2 Assembly and details of drawing</p> <p>3.2.3. Dimensions</p> <p>3.3 Measurement</p> <p>3.3.1 Linear measuring tools</p> <p>3.4 Materials and related science</p> <p>3.4.1 Classification and mechanical properties of engineering materials</p>	<p>3.1 Selecting materials</p> <p>3.2 Using measuring tools</p> <p>3.3 Operating power hacksaw</p>
------------------	--	--	--

RANGE OF VARIABLES

VARIABLE	RANGE
1. Plan/drawings	<p>1.1 Dimensions</p> <p>1.2 Tolerance</p>
2. Materials	<p>2.1. Ferrous</p> <p>2.2. Non-ferrous</p>
3. Measuring tools	<p>3.1 Steel rule</p> <p>3.2 Pull-push rule</p>

4. Cutting tools/equipment	4.1 Hacksaw 4.2 Power hacksaw
5. Safety procedure	Safety involves the handling of: 5.1 Equipment 5.2 Tools 5.3 Materials

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Interpreted plans/drawings 1.2 Selected natural according to the requirement 1.3 Performed cutting operation 1.4 Cutting tools/equipment used safely
2. Resource Implications	The following resources MUST be provided: 2.1 Tools, equipment and facilities appropriate processes of an activity 2.2 Materials relevant to the proposal activity 2.3 Drawings/plans
3. Methods of Assessment	Competency may be assessed through: 3.1 Direct observation 3.2 Oral short answer question 3.3 Practical exercises
4. Context of Assessment	Competency may be assessed in the workplace or in a simulated work environment .

UNIT OF COMPETENCY : PERFORM SHOP COMPUTATIONS (BASIC)

UNIT CODE : MEE722204

UNIT DESCRIPTOR : This unit covers the competencies required to perform basic calculations using the four fundamental operations.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Perform four fundamental operations.	1.1 Simple calculations performed using four <i>fundamental operations</i> . 1.2 Simple calculations performed involving fractions and mixed numbers using four fundamental operations.	1.1 English and metric system of measurements	1.1 Performing calculations using pen and paper or on a calculator
2. Perform basic calculations involving fractions and decimals	2.1 Simple calculations are performed involving fractions and decimals using the four fundamental operations. 2.2 Decimal are converted into fraction (and vice versa) accurately.	2.1 English and metric system of measurements	2.1 Performing calculations using pen and paper or on a calculator

<p>3. Perform basic calculations involving percentages</p>	<p>3.1 Simple calculations are performed to obtain percentages from information expressed in either fractional or decimal format.</p>	<p>3.1 English and metric system of measurements</p>	<p>3.1 Performing calculations using pen and paper or on a calculator</p>
<p>4. Perform basic calculation involving ration and proportion</p>	<p>4.1 Simple calculations are performed involving ratios and proportions using whole numbers, fractions and decimal fractions.</p>	<p>4.1 English and metric system of measurements</p>	<p>4.1 Performing calculations using pen and paper or on a calculator</p>
<p>5. Perform calculations on algebraic expressions</p>	<p>5.1 Simple calculations are performed on algebraic expressions using the four fundamental operations.</p> <p>5.2 Simple transposition of formulae is carried out to isolate the variable required, involving the four fundamental operations.</p>	<p>5.1 English and metric system of measurements</p>	<p>5.1 Performing calculations using pen and paper or on a calculator</p>

RANGE OF VARIABLES

VARIABLE	RANGE
1. Four fundamental operations	1.1 Addition 1.2 Subtraction 1.3 Multiplication 1.4 Division
2. Algebraic expressions	Calculation using formula for determining: 2.1 tap drill size 2.2 feed 2.3 speed

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate performed calculations: 1.1 using four fundamental operations 1.2 involving fractions and mixed numbers 1.3 involving fractions and decimals 1.4 involving percentages 1.5 involving ratio and proportion 1.6 on algebraic expressions 1.7 of simple formulae.
2. Resource Implications	The following resources MUST be provided: 2.1 Tools, equipment and facilities appropriate to processes or activity 2.2 Materials relevant to the proposed activity
3. Methods of Assessment	Competency may be assessed through: 3.1 written or oral short answer questions 3.2 practical exercises
4. Context of Assessment	Competency may be assessed in the workplace or in a simulated workplace environment.

UNIT OF COMPETENCY : MEASURE WORKPIECE (BASIC)

UNIT CODE : MEE722205

UNIT DESCRIPTOR : This unit covers the competencies required to select and use measuring tools according to the level of accuracy for specific firearms and ensuring proper handling and storage.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Select and use measuring tools	1.1 Measuring tools are selected and used according to the level of accuracy required. 1.2 Measurements taken are accurate to the finest graduation of the selected measuring instrument. 1.3 Measuring technique used is correct and appropriate to the device used	1.1 Types, purposes and accuracy of measuring instruments 1.2 Capability of measuring instruments 1.3 Part dimensions and tolerances 1.4 Techniques for measuring dimensions 1.5 Care and storage procedure of measuring tools	1.1 Safe handling of measuring tools and materials

2. Clean and store measuring tools	2.1 Care and storage of devices undertaken to manufacturer's specifications or standard operating procedures.	2.1 Types, purposes and accuracy of measuring instruments 2.2 Capability of measuring instruments 2.3 Part dimensions and tolerances 2.4 Techniques for measuring dimensions 2.5 Care and storage procedure of measuring tools	2.1 Safe handling of measuring tools and materials
------------------------------------	---	--	--

RANGE OF VARIABLES

VARIABLE	RANGE
1. Measuring tools	Measuring tools include 1.1 Steel tape 1.2 Steel rule 1.3 Straight edge 1.4 Combination square 1.5 Steel square 1.6 Divider or trammel 1.7 Caliper 1.8 Protractor 1.9 Vernier caliper 1.10 Micrometer
2. Measurements	2.1 length 2.2 diameter 2.3 depth 2.4 flatness 2.5 straightness 2.6 squareness

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Selected and used measuring instruments 1.2 Cleaned and stored measuring instruments
2. Resource Implications	The following resources MUST be provided: 2.1 Tools, equipment and facilities appropriate to the activity 2.2 Specimen component or part to the proposed activity
3. Methods of Assessment	Competency may be assessed through: 3.1 direct observation 3.2 demonstration 3.3 written or oral short answer questions 3.4 portfolio
4. Context of Assessment	Competency may be assessed in the workplace or in a simulated workplace environment

UNIT OF COMPETENCY : PERFORM ROUTINE HOUSEKEEPING

UNIT CODE : MEE722206

UNIT DESCRIPTOR : This unit covers the competencies required to maintain an organized and clean work area.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Organize work area.	1.1 Work area maintained in a safe, uncluttered and organized manner according to workshop policy. 1.2 All tasks carried out safely, effectively and efficiently with minimum inconvenience according to workshop policy. 1.3 Workshop policies and procedures for tidying work areas and placing items in designated areas applied.	1.1 Shop safety practices 1.2 Machine shop equipment 1.3 Shop policies regulations 1.4 Shop cleaning equipment	1.2 Using and storing of cleaning equipment 1.3 Using and storing chemicals, hazardous substances and flammable liquids 1.4 Literacy and numeracy skills in reading and understanding labels and instructions for the handling and use of chemicals and hazardous substances 1.5 Communication skills 1.6 Organizing skills

<p>2. Clean work area</p>	<p>2.1 Shop policies and procedures applied for cleaning work areas.</p> <p>2.2 Wastes promptly removed and disposed of according to shop policies and environmental requirements.</p> <p>2.3 Spills, wastes and other potential hazards reported to appropriate personnel and removed according to shop policies and environmental requirements.</p> <p>2.4 Signage promptly displayed in regard to unsafe areas.</p> <p>2.5 Consumable materials maintained and stored correctly after use.</p> <p>2.6 Tools and equipment (including guards) cleaned and used in accordance with manufacturer's instructions.</p>	<p>2.1 Shop safety practices</p> <p>2.2 Machine shop equipment</p> <p>2.3 Shop policies regulations</p> <p>2.4 Shop cleaning equipment</p>	<p>2.2 Using and storing of cleaning equipment</p> <p>2.3 Using and storing chemicals, hazardous substances and flammable liquids</p> <p>2.4 Literacy and numeracy skills in reading and understanding labels and instructions for the handling and use of chemicals and hazardous substances</p> <p>2.5 Communication skills</p> <p>2.6 Organizing skills</p>
---------------------------	--	--	--

RANGE OF VARIABLES

VARIABLE	RANGE
<p>1. Workshop policy</p>	<p>Shop policy and procedure in regard to:</p> <p>1.1 Housekeeping practices</p> <p>1.2 Maintenance and storage of cleaning equipment</p> <p>1.3 Use and storage of cleaning chemicals</p>
<p>2. Work area</p>	<p>Work area may include:</p> <p>2.1 Work benches</p> <p>2.2 Walkways and aisles</p> <p>2.3 Fixtures and other working surfaces</p>

3. Tools and Equipment	<p>Equipment and tools may include:</p> <ul style="list-style-type: none"> 3.1 Drill Press 3.2 Pedestal Grinder 3.3 Surface plate 3.4 Layout and marking tools 3.5 Cutting tools (hacksaw, chisel, files) 3.6 Inspection and measuring tools (templates, vernier caliper, micrometer, straight edge, gauges, etc...)
------------------------	--

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate organized and cleaned work areas according to shop policies and environmental requirements.
2. Resource Implications	<p>The following resources MUST be provided:</p> <ul style="list-style-type: none"> 2.1 Tools, equipment and facilities appropriate to processes or activity 2.2 Materials and documentation relevant to the proposed activity 2.3 Shop policy and/or procedures manual on housekeeping, cleaning and occupational health and safety
3. Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> 3.1 direct observation 3.2 demonstration or role play 3.3 written or oral short answer questions 3.4 identify colleagues/clients who can be approached for the collection of competency evidence, where appropriate
4. Context of Assessment	Competency may be assessed in the workplace or in a simulated workplace environment.

UNIT OF COMPETENCY : PERFORM SHOP COMPUTATIONS (INTERMEDIATE)

UNIT CODE : MEE722207

UNIT DESCRIPTOR : This unit covers the competencies required to perform calculations involving triangles and tapers.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Perform calculations involving triangles.	1.1 Problems involving right triangles are performed using the trigonometric functions. 1.2 Problems involving non-right triangles are performed using sine and cosine rules. .	1.1 English and metric system of measurements 1.2 Geometrical shapes	1.1 Performing calculations using pen and paper or on a calculator
2. Calculate taper	2.1 Taper of work calculated correctly using the appropriate formula.	2.1 English and metric system of measurements 2.2 Geometrical shapes	2.1 Performing calculations using pen and paper or on a calculator

RANGE OF VARIABLES

VARIABLE	RANGE
1. trigonometric functions	1.1 Sine 1.2 Cosine 1.3 Tangent 1.4 Cotangent 1.5 Secant 1.6 Cosecant

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate performed calculations: 1.1 Involving right triangles 1.2 Involving non-right triangles 1.3 involving tapers.
2. Resource Implications	The following resources MUST be provided: 2.1 Tools, equipment and facilities appropriate to processes or activity 2.2 Materials relevant to the proposed activity
3. Methods of Assessment	Competency may be assessed through: 3.1 written or oral short answer questions 3.2 practical exercises
4. Context of Assessment	Competency may be assessed in the workplace or in a simulated workplace environment.

UNIT OF COMPETENCY : MEASURE WORKPIECE USING ANGULAR MEASURING INSTRUMENTS

UNIT CODE : MEE722208

UNIT DESCRIPTOR : This unit covers the competencies required to measure workpieces using angular measuring instruments.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Select and use angular measuring tools.	1.1 Problems involving right triangles are performed using the trigonometric functions. 1.2 Problems involving non-right triangles are performed using sine and cosine rules. .	1.1 Types, purposes and accuracy of angular measuring instruments 1.2 Capability of measuring tools 1.3 Techniques for measuring angles and tapers 1.4 Care and storage procedure of measuring tools	1.1 Safe handling of measuring tools and materials 1.2 Reading vernier scale 1.3 Reading micrometer
2. Maintain angular measuring tools r	2.2 Taper of work calculated correctly using the appropriate formula.	2.1 Types, purposes and accuracy of angular measuring instruments 2.2 Capability of measuring tools 2.3 Techniques for measuring angles and tapers 2.4 Care and storage procedure of measuring tools	2.1 Safe handling of measuring tools and materials 2.2 Reading vernier scale 2.3 Reading micrometer

3. Clean and store measuring tools	3.1 Care and storage of devices undertaken to manufacturer's specifications or standard operating procedures.	3.1 Types, purposes and accuracy of angular measuring instruments 3.2 Capability of measuring tools 3.3 Techniques for measuring angles and tapers 2.4 Care and storage procedure of measuring tools	3.1 Safe handling of measuring tools and materials 3.2 Reading vernier scale 3.3 Reading micrometer
------------------------------------	---	---	---

RANGE OF VARIABLES

VARIABLE	RANGE
1. Angular measuring tools	Measuring tools include: 1.1 bevel protractor 1.2 gage blocks 1.3 sine bar
2. Measurements	2.1 angle 2.2 taper

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate performed calculations: 1.1 Selected and used angular measuring instruments 1.2 Maintained/adjusted instruments 1.3 Cleaned and stored measuring instruments
2. Resource Implications	The following resources MUST be provided: 2.1 Tools, equipment and facilities appropriate to the activity 2.2 Specimen component or part to the proposed activity
3. Methods of Assessment	Competency may be assessed through: 3.1 direct observation 3.2 demonstration 3.3 written or oral short answer questions 3.4 practical exercises
4. Context of Assessment	Competency may be assessed in the workplace or in a simulated workplace environment.

UNIT OF COMPETENCY : PERFORM SHOP COMPUTATIONS (ADVANCED)

UNIT CODE : MEE722209

UNIT DESCRIPTOR : This unit covers the competencies required to perform calculations involving gear ratio, indexing problems and gearing problems.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Calculate gear ratio.	1.1 <i>Gear ratio</i> calculated using appropriate formula.	1.5 English and metric system of measurements 1.6 Geometrical shapes 1.7 Gear types	1.4 Performing calculations using pen and paper or on a calculator 1.5 Reading and interpreting working drawings
2. Solve indexing problems	2.1 <i>Indexing</i> problems involving number of turns, spaces and circle plates are solved using appropriate formulas.	2.4 English and metric system of measurements 2.5 Geometrical shapes 2.6 Gear types	2.4 Performing calculations using pen and paper or on a calculator 2.5 Reading and interpreting working drawings
3. Solve gearing problems	3.1 Gearing problems are solved using appropriate formulas.	3.1 English and metric system of measurements 3.2 Geometrical shapes 3.3 Gear types	3.1 Performing calculations using pen and paper or on a calculator 3.2 Reading and interpreting working drawings

4. Use geometrical principles in the solution of problems	4.1 Solution to problems is obtained by applying geometrical properties of angles, triangles and circles in the calculation	4.1 English and metric system of measurements 4.2 Geometrical shapes 4.3 Gear types	4.1 Performing calculations using pen and paper or on a calculator 4.2 Reading and interpreting working drawings
---	---	---	---

RANGE OF VARIABLES

VARIABLE	RANGE
1. gear ratio	1.1 addendum 1.2 clearance 1.3 dedendum 1.4 diametral pitch 1.5 module 1.6 outside diameter 1.7 pitch diameter 1.8 root diameter 1.9 number of teeth etc.
2. indexing	2.1 direct indexing 2.2 simple indexing 2.3 compound indexing 2.4 differential indexing

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate performed calculations: 1.1 involving gear ratio 1.2 involving indexing problems 1.3 involving gearing problems 1.4 involving geometrical properties of angles, triangles and circles .
2. Resource Implications	The following resources MUST be provided: 2.1 Tools, equipment and facilities appropriate to processes or activity 2.2 Materials relevant to the proposed activity
3. Methods of Assessment	Competency may be assessed through: 3.1 written or oral short answer questions 3.2 practical exercises

4. Context of Assessment	Competency may be assessed in the workplace or in a simulated workplace environment.
--------------------------	--

UNIT OF COMPETENCY : MEASURE WORKPIECE USING GAGES AND SURFACE TEXTURE COMPARATOR

UNIT CODE : MEE722210

UNIT DESCRIPTOR : This unit covers the competencies required to measure workpieces using fixed and adjustable gages.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Select and use fixed and adjustable gages	1.1 Appropriate gages are selected and used to undertake the required comparison or measurement using standard operating procedures. 1.2 Consistent and accurate measurements obtained conforms to drawing specification 1.3 Measuring technique used is correct and appropriate to the device used.	1.1 Types and application of fixed and adjustable gages 1.2 Gage limits and accuracy 1.3 Techniques for measuring components 1.4 Care and storage procedure of measuring tools	1.1 Safe handling of measuring tools and materials 1.2 Verifying measurements with drawing specifications
2. Perform surface texture measurements	2.1 Surface texture are measured according to worksite procedures. 2.2 Measurements taken are within the level of accuracy required.	2.1 Types and application of fixed and adjustable gages 2.2 Gage limits and accuracy 2.3 Techniques for measuring components 2.4 Care and storage procedure of measuring tools	2.1 Safe handling of measuring tools and materials 2.2 Verifying measurements with drawing specifications

3. Clean and store measuring tools	3.1 Care and storage of devices undertaken to manufacturer's specifications or standard operating procedures.	3.1 Types and application of fixed and adjustable gages 3.2 Gage limits and accuracy 3.3 Techniques for measuring components 3.4 Care and storage procedure of measuring tool	3.1 Safe handling of measuring tools and materials 3.2 Verifying measurements with drawing specifications
------------------------------------	---	--	--

RANGE OF VARIABLES

VARIABLE	RANGE
1. Gages	Fixed and adjustable gages include: 1.1 Gage blocks 1.2 Telescoping gages 1.3 Center gages 1.4 Thread gages 1.5 Dial bore gages 1.6 Height gages 1.7 Radius gages 1.8 Go-no-go gages 1.9 Depth gages
2. Measurements	Measurements undertaken may include: 2.1 Linear dimensions 2.2 Diameters 2.3 Depths 2.4 Fits 2.5 Tapers 2.6 Threads 2.7 Radius 2.8 Squareness 2.9 Surface texture etc

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Selected and used fixed and adjustable gages 1.2 Performed surface texture measurements 1.3 Cleaned and stored measuring instruments.
2. Resource Implications	The following resources MUST be provided: 2.1 Tools, equipment and facilities appropriate to the activity 2.2 Specimen component or part to the proposed activity 2.3 Drawing
3. Methods of Assessment	Competency may be assessed through: 3.1 direct observation 3.2 demonstration 3.3 written or oral short answer questions 3.4 portfolio
4. Context of Assessment	Competency may be assessed in the workplace or in simulated workplace environment

UNIT OF COMPETENCY : PERFORM PREVENTIVE AND CORRECTIVE MAINTENANCE

UNIT CODE : MEE722211

UNIT DESCRIPTOR : This unit covers the knowledge and skills required in performing preventive and corrective maintenance such as inspection and repair of hand tools, cleaning and lubrication of machine parts and changing drive pulley and belts.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Perform inspection of machine	1.1 Machine inspected according to worksite procedures . 1.2 Status/Report recorded on proforma or reported orally according to worksite procedure.	1.1 Proper cleaning and oiling 1.2 Kinds of oil 1.3 Parts and function of machine tools 1.4 Cutting oil, coolant or compound 1.5 Pulleys and belts 1.6 Location of main switches of the machine 1.7 Handling and storage of tools 1.8 Checklist of safe working conditions 1.9 Procedures in cleaning and disposal of waste materials	1.1 Inspecting and repairing hand tools 1.2 Inspecting and changing drive pulleys and belts 1.3 Replacing and adjusting machine parts 1.4 Distinguishing old and new coolant 1.5 Distinguishing odor of polluted coolant 1.6 Selecting coolant, cutting oil or compounds 1.7 Changing coolant 1.8 Inspecting work area for safe working environment 1.9 Cleaning work

			area 1.10 Disposing metal scraps, chips and waste materials.
2. Perform cleaning and lubricating of machine	2.1 Machines lubricated as per manufacturer's recommendation using appropriate tools and materials 2.2 Fluids and lubricants replaced and/or topped up according to the prescribed schedule. .	2.1 Proper cleaning and oiling 2.2 Kinds of oil 2.3 Parts and function of machine tools 2.4 Cutting oil, coolant or compound 2.5 Pulleys and belts 2.6 Location of main switches of the machine 2.7 Handling and storage of tools 2.8 Checklist of safe working conditions 2.9 Procedures in cleaning and disposal of waste materials	2.1 Inspecting and repairing hand tools 2.2 Inspecting and changing drive pulleys and belts 2.3 Replacing and adjusting machine parts 2.4 Distinguishing old and new coolant 2.5 Distinguishing odor of polluted coolant 2.6 Selecting coolant, cutting oil or compounds 2.7 Changing coolant 2.8 Inspecting work area for safe working environment 2.9 Cleaning work area 2.10 Disposing metal scraps, chips and waste materials.
3. Perform minor machine repair and adjustments	3.1 Minor machine repairs performed according to manufacturer's instructions or worksite procedures. 3.2 Machine moving parts adjusted to manufacturer's specifications.	3.1 Proper cleaning and oiling 2.2 Kinds of oil 2.3 Parts and function of machine tools 2.4 Cutting oil, coolant or compound 2.5 Pulleys and belts	3.1 Inspecting and repairing hand tools 3.2 Inspecting and changing drive pulleys and belts 3.3 Replacing and adjusting machine parts

		<p>2.6 Location of main switches of the machine</p> <p>2.7 Handling and storage of tools</p> <p>2.8 Checklist of safe working conditions</p> <p>2.9 Procedures in cleaning and disposal of waste materials</p>	<p>3.4 Distinguishing old and new coolant</p> <p>3.5 Distinguishing odor of polluted coolant</p> <p>3.6 Selecting coolant, cutting oil or compounds</p> <p>3.7 Changing coolant</p> <p>3.8 Inspecting work area for safe working environment</p> <p>3.9 Cleaning work area</p> <p>3.10 Disposing metal scraps, chips and waste materials.</p>
4. Maintain hand tools	<p>4.1 Tool cutting ground to recommended specifications</p> <p>4.2 Hand tools lubricated and stored according to prescribed procedure</p>	<p>2.1 Proper cleaning and oiling</p> <p>2.2 Kinds of oil</p> <p>2.3 Parts and function of machine tools</p> <p>2.4 Cutting oil, coolant or compound</p> <p>2.5 Pulleys and belts</p> <p>2.6 Location of main switches of the machine</p> <p>2.7 Handling and storage of tools</p> <p>2.8 Checklist of safe working conditions</p> <p>2.9 Procedures in cleaning and disposal of waste materials</p>	<p>3.1 Inspecting and repairing hand tools</p> <p>3.2 Inspecting and changing drive pulleys and belts</p> <p>3.3 Replacing and adjusting machine parts</p> <p>3.4 Distinguishing old and new coolant</p> <p>3.5 Distinguishing odor of polluted coolant</p> <p>3.6 Selecting coolant, cutting oil or compounds</p> <p>3.7 Changing coolant</p> <p>3.8 Inspecting work area for safe working environment</p> <p>3.9 Cleaning work area</p> <p>3.10 Disposing metal scraps, chips and waste materials.</p>

RANGE OF VARIABLES

VARIABLE	RANGE
1. Inspected	Inspected machine parts include: 1.1 V-belt 1.2 Bearing 1.3 Gears 1.4 Clutch 1.5 Drive pulley
2. Machines	Machine include but not limited to: 2.1 Lathe machine 2.2 Milling machine 2.3 Grinding machine
3. Tools and materials	Tools and materials used include: 3.1 Lubricants 3.2 Oil can 3.3 Grease gun 3.4 Oil 3.5 Coolant or compound

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that that the candidate: 1.1 Performed inspection of machine 1.2 Performed cleaning and lubricating of machine 1.3 Performed minor machine repairs and adjustments
2. Resource Implications	The following resources MUST be provided: 2.1 Tools, equipment and facilities appropriate to processes or activity 2.2 Materials relevant to the proposed activity
3. Methods of Assessment	Competency may be assessed through: 3.1 direct observation of activities 3.2 oral or written questioning
4. Context of Assessment	Competency may be assessed in the workplace or in simulated workplace environment.

CORE COMPETENCIES

UNIT OF COMPETENCY : DEMONSTRATE FIREARMS SAFETY RULES AND FUNDAMENTALS OF MARKSMANSHIP

UNIT CODE : AB-MEE1374020722301

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitude required to demonstrate firearms safety rules and fundamentals of marksmanship. It includes practicing firearm safety handling, practicing safety protocols in the workplace, establishing test area and establishing safety area.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Practice Firearm safety handling	1.1 <i>Gun Safety protocols</i> is followed based on industry standards 1.2 Firearm basic parts and functions are identified based on industry standards 1.3 Gun handling techniques are applied based on the fundamentals of marksmanship 1.4 Report to the Trainer for any unwanted incidents based on OSH standards	Communication 1.1 Fundamental s of armament 1.2 Fundamental s of marksmanship 1.3 Gun safety rules awareness 1.4 International gun safety rules and protocols	1.1 Handling gun safely 1.2 Enumerating five fundamentals of marksmanship 1.1 Identifying hazards and risks
2. Practice safety protocols in workplace	2.1 <i>Safety protocols</i> is followed based on OSH standards 2.2 <i>PPE</i> is worn appropriately based	Science 2.1 Gun safety rules awareness	2.4 Handling gun safety 2.5 Enumerating five fundamentals

	<p>on OSH standards</p> <p>2.3 Workplace safety and emergency signages are observed based on OSH standards</p>	<p>2.2 Appropriate PPE</p> <p>2.3 Location of designated emergency exits</p> <p>1.1 Description of signages</p> <p>1.2 Location of emergency kits</p> <p>1.3 Machine and tools safety</p> <p>1.4 First aid and emergency procedures</p> <p>1.5 Safe firearm storage system</p> <p>Communication</p> <p>1.6 Five fundamentals of marksmanship</p> <p>1.7 Fundamentals of armaments</p>	<p>of marksmanship</p> <p>2.6 Wearing of appropriate PPE</p> <p>2.7 Identifying location</p> <p>2.8 Interpreting signages</p> <p>2.9 Applying first aid</p> <p>2.10 Handling machine and tools safely</p> <p>2.11 Storing firearms system safely</p>
3. Establish test area	<p>3.1 Standard backstop area is established in the designated area</p> <p>3.2 Standard backstop area is constructed based on standards</p> <p>3.3 Exhaust system of test range facility is maintained according to OSH standards</p> <p>3.4 Unwanted</p>	<p>Science</p> <p>3.1 Hazards and risk</p> <p>3.2 OSH standards</p> <p>Communication</p> <p>3.3 Understand ballistic behavior</p> <p>3.4 Cycle of operation</p> <p>3.5 PNP FEO regulations</p>	<p>3.1 Following test firing procedures</p> <p>3.2 Identifying hazards and risks</p> <p>3.3 Managing jam issue</p> <p>3.4 Identifying backstop and bullet trap designs</p>

	incidents is reported to Trainer based on OSH standards	Technology 3.6 Ammo classifications	3.5 Analyzing bullet trajectory 3.6 Ensuring firearm and ammo compatibility
4. Establish safety area	<p>4.1 Designated area is installed with appropriate signages based on basic gun safety rules</p> <p>4.2 Safety equipment was verified as readily available based on industry procedures</p> <p>4.3 Backstop is maintained regularly based on workplace policy</p>	<p>Science</p> <p>4.1 OSH standards</p> <p>4.2 Workplace hazards and risks</p> <p>Communication</p> <p>4.3 International gun safety rules and protocols</p> <p>4.4 Emergency response and first aid protocols</p> <p>4.5 Lessons learned/previous incidents</p> <p>4.6 Maintenance procedures</p>	<p>4.1 Handling gun safely</p> <p>4.2 Practicing safe working habits</p> <p>4.3 Wearing PPEs</p> <p>4.4 Practicing 5S</p> <p>4.5 Practicing emergency drills</p> <p>4.6 Scheduling preventive maintenance</p>

RANGE OF VARIABLES

VARIABLE	RANGE
1. Gun Safety protocols	May include but not limited to: <ul style="list-style-type: none"> 1.1 5S 1.2 Four golden rules on gun safety 1.3 Do's and Don'ts 1.4 Emergency drills
2. PPE	May include but not limited to: <ul style="list-style-type: none"> 2.1 Eye protection 2.2 Ear protection 2.3 Nose protection or respirator 2.4 Safety shoes 2.5 Ballistic apron 2.6 Gloves 2.7 Face protection
3. Signages	May include but not limited to: <ul style="list-style-type: none"> 3.1 Manmade Hazards 3.2 Natural Hazards 3.3 Hazardous waste disposals 3.4 Exits 3.5 Safety areas
4. Backstop area	May include: <ul style="list-style-type: none"> 4.1 Steel plate 4.2 Concrete 4.3 Stand filled 4.4 Logs 4.5 Used tiles 4.6 Angle and design 4.7 Baffles
5. Standards	May include: <ul style="list-style-type: none"> 5.1 FEO requirements 5.2 BFP requirements 5.3 OSH

<p>6. Exhaust system</p>	<p>May include:</p> <ul style="list-style-type: none"> 6.1 Air filtration 6.2 HEPA 6.3 Negative pressure system 6.4 Positive pressure system 6.5 Proper ventilation
<p>7. Designated area</p>	<p>May include:</p> <ul style="list-style-type: none"> 7.1 Waste disposal 7.2 Gun handling area 7.3 Storage 7.4 Staging area 7.5 Access control
<p>8. Safety equipment</p>	<p>May include:</p> <ul style="list-style-type: none"> 8.1 Fire extinguisher 8.2 First aid kit 8.3 Eye wash station 8.4 Physical barriers 8.5 Exhaust systems

EVIDENCE GUIDE

<p>1. Critical aspect of competencies</p>	<p>Assessment required evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Followed gun safety protocols based on industry standards 1.2 Understood firearm basic parts and functions based on industry standards 1.3 Understood proper gun handling techniques based on fundamentals of marksmanship 1.4 Reported unwanted incidents to the trainer based on OSH standards 1.5 Followed safety protocols based on OSH standards 1.6 Worn personal protective equipment appropriately based on OSH standards 1.7 Observed workplace safety and emergency signages based on OSH standards 1.8 Established standard backstop area in designated area 1.9 Constructed standard backstop area based on standards 1.10 Maintained exhaust system of test range facility according to OSH standards 1.11 Installed designated area with appropriate signages based on basic gun safety rules 1.12 Verified safety equipment availability based on industry procedures 1.13 Maintained backstop regularly based on workplace policy
<p>2. Resource Implications</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> 2.1 Machines, equipment, tools, supplies and materials relevant to the activity to be performed 2.2 Actual safe work area with complete facilities
<p>3. Methods of Assessment</p>	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> 3.1 Demonstration with oral questioning 3.2 Direct observation 3.3 Written test
<p>4. Context for Assessment</p>	<ul style="list-style-type: none"> 4.1 Competency may be assessed in actual safe work area or simulated actual safe work area 4.2 Assessment done during students return demonstration

UNIT OF COMPETENCY : PERFORM PREPARATORY ACTIVITIES FOR GUNSMITHING

UNIT CODE : AB-MEE1374020722302

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitude required to perform preparatory activities for gunsmithing. It includes determining job order/directives, Set up a clean and safe work area and preparing tools and equipment.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Determine Job Order/Directives	1.1 Firearm model and serial number are identified based on the job order/directives 1.2 Specific instruction is identified based on the job order/directives 1.3 Specific job requirements are checked based on job order/directives 1.4 Specific tools are prepared based on job requirement	Communication 1.1 Gun safety awareness 1.2 Parts compatibility 1.3 Clearance procedure 1.4 Data Privacy Act Technology 1.5 Proper storage room 1.6 Types of firearms 1.7 Types of tools	1.1 Communication skills 1.2 Familiarizing types of firearms 1.3 Identifying types of tools 1.4 Handling gun safety 1.5 Determining appropriate parts 1.6 Complying with procedures 1.7 Storing firearm properly 1.8 Complying Data Privacy Act
2. Set up a clean and safe work	2.1 Work area is verified to be organized based	Communication 2.15S Awareness 2.2OSH	2.15S 2.2OSH Standards

<p>area</p>	<p>on industry</p> <p>2.2 Work area is observed to be adequately ventilated in accordance with industry standards</p> <p>2.3 Work area is confirmed to be cleaned based on industry standards</p> <p>2.4 Work area is assessed to be free from hazards and risks according with industry standards</p>	<p>Standards</p> <p>2.3 Familiarization of Maintenance Checklist</p>	<p>2.3 Familiarizing checklist</p>
<p>3. Prepare tools and equipment</p>	<p>3.1 Tools and equipment are checked or replaced based on industry standards</p> <p>3.2 Tools and equipment are prepared based on job requirement</p> <p>3.3 Tools and equipment are used according to its function</p> <p>3.4 Tools and equipment are maintained based on industry standards</p>	<p>Communication</p> <p>3.1 Familiarization on the use of tools and equipment</p> <p>3.2 Familiarization of tools and equipment</p> <p>3.3 Determine whether tools and equipment are functional</p>	<p>3.1 Familiarizing tools and equipment</p> <p>3.2 Familiarizing use of tools and equipment</p> <p>3.3 Determining tools and equipment functionality</p>

RANGE OF VARIABLES

VARIABLE	RANGE
1. Firearm model	May include: <ul style="list-style-type: none"> 1.1 Single-action, recoil-operated, semi-automatic pistol (1911) 1.2 Clamshell and Solid frame Striker-fired pistol 1.3 Revolver 1.4 Shot gun (Pump-action, and semi-automatic) 1.5 Rifle (Bolt action, and semi-automatic) 1.6 Semi-automatic carbine (M4)
2. Job requirements	May include: <ul style="list-style-type: none"> 2.1 Time frame 2.2 Scope of work 2.3 Tools, parts
3. Specific tools	May include: <ul style="list-style-type: none"> 3.1 Cleaning mat 3.2 Cleaning kits 3.3 Proper lubricants 3.4 Needle file 3.5 Screws, wrenches 3.6 Punch set 3.7 Hammer/Rubber mallet 3.8 Pliers
4. Tools and equipment	<ul style="list-style-type: none"> 4.1 Hand tools <ul style="list-style-type: none"> 4.1.1 Needle file 4.1.2 Screws, wrenches 4.1.3 Punch set 4.1.4 Hammer/rubber mallet 4.1.5 Pliers 4.2 Sandblasting machine 4.3 Bench vice 4.4 Grinder

EVIDENCE GUIDE

<p>1. Critical aspect of competencies</p>	<p>Assessment required evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Identified firearm model and serial number based on job order or directives 1.2 Identified specific instructions based on job order or directives 1.3 Checked specific job requirements based on job order or directives 1.4 Prepared specific tools based on job requirements 1.5 Identified firearm model and serial number based on job order or directives 1.6 Identified specific instructions based on job order or directives 1.7 Checked specific job requirements based on job order or directives 1.8 Prepared specific tools based on job requirements 1.9 Checked or replaced tools and equipment based on industry standards 1.10 Prepared tools and equipment based on job requirements 1.11 Used tools and equipment according to their functions 1.12 Maintained tools and equipment based on industry standards
<p>2. Resource Implications</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> 2.1 Tools, equipment, and materials relevant to the activity to be performed 2.2 Actual or simulated safety area with complete facilities
<p>3. Methods of Assessment</p>	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> 3.1 Demonstration with oral questioning 3.2 Direct observation 3.3 Written test
<p>4. Context for Assessment</p>	<ul style="list-style-type: none"> 4.1 Competency may be assessed in actual safety area or simulated safety area 4.2 Assessment done during students return demonstration

UNIT OF COMPETENCY : REPAIR AND REFURBISH COMPLEX DEFECTS OF FIREARMS

UNIT CODE : AB-GMS1380700722301

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitude required to repair and refurbish complex defects of firearms. It includes conducting technical inspection of firearms, applying corrective actions to firearms, applying protective layer (Coat firearms) and conducting functional testing of firearms

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Conduct technical inspection of firearms	1.1 PPE is worn appropriately based on OSH standards 1.2 Technical Issues on performing complete disassembly, assembly, and function test are assessed based on standard operation procedure /workplace policy. 1.3 Job order/ directive is prepared based on technical inspection report 1.4 Appropriate tools /materials are identified based on job order/directives 1.5 Activity workplan is prepare based on job order/directives 1.6 Cost estimates are	Communication 1.1 Standard price of parts 1.2 Evaluation of Issues 1.3 Effective communication s skills 1.4 Step-by-step Workplan 1.5 Technical skills on firearm issues 1.6 Preparation of contracts Mathematics 1.7 Basic knowledge on cost estimation 1.8 Preparation of quotation Environmental and Legal Laws	1.1 Evaluating of issues 1.2 Technical knowhow in firearms 1.3 Technical knowhow on tools 1.4 Technical knowhow on firearm parts 1.5 Understanding terms and conditions 1.6 Computer operation skills 1.7 Firearms assembly and disassembly

	<p>prepared based on workplan</p> <p>1.7 Workplan is communicated to the customer based on workplace policy</p> <p>1.8 Workplan is finalized for implementation based on customer's approval</p>	<p>1.9 Republic Act No. 10591 or Comprehensive Firearm and Ammunition Regulation Act</p>	
<p>2. Apply corrective actions to firearms</p>	<p>2.1 Defective firearm parts are identified based on job order/directives</p> <p>2.2 Defective firearm parts are repaired / replaced based on job order/directives</p> <p>2.3 Firearms are cleaned and lubricated based on standard operating procedure</p> <p>2.4 Report is prepared with full documentation on action taken based on standard operating procedure</p> <p>2.5 Report is filed, stored and copies are</p>	<p>Communication</p> <p>2.1 Best practices in implementing corrective actions</p> <p>2.2 Procedures in repairing/ replacing defective parts</p> <p>Technology</p> <p>2.3 Tools, equipment, materials</p> <p>2.4 Variety of parts to be used</p> <p>2.5 Maintenance and preservation of firearms</p>	<p>2.1 Identifying and using appropriate tools, equipment and materials</p> <p>2.2 Cleaning and lubricating firearms</p> <p>2.3 Applying best practices in repairing and replacing defective parts</p> <p>2.4 Following the procedure in repairing/ replacing defective parts</p> <p>2.5 Communication skills</p>

	provided to concerned individuals based on standard operating procedure		
3. Apply protective layer (Coat firearms)	<p>3.1 Job order/ directive prepared based on technical inspection conducted</p> <p>3.2 Appropriate tools/materials are prepared based on job order/directives</p> <p>3.3 Appropriate finish is applied based on job order/directives</p>	<p>3.1 Understand firearms coating</p> <p>3.2 Cost estimation</p> <p>3.3 Environmental Considerations</p> <p>3.4 Material considerations</p> <p>3.5 Health and safety considerations</p> <p>3.6 Proper disposal of waste material</p> <p>3.7 Identification of appropriate PPEs</p> <p>3.8 Segregation and disposal of waste materials</p>	<p>3.1 Firearms coating skills</p> <p>3.2 Estimating costs</p> <p>3.3 Wearing of appropriate PPE</p> <p>3.4 Segregating and disposing waste materials</p>
4 Conduct functional testing of firearms	<p>4.1 Resources are prepared for live fire testing based on standard operating procedure</p> <p>4.2 PPE is properly worn based on safe firing test procedures</p> <p>4.3 Safety protocols is demonstrated based on OSH standards</p>	<p>4.1 Four cardinal rules of gun safety</p> <p>4.2 Proper gun handling</p> <p>4.3 Safety protocols</p> <p>4.4 Different malfunction terms</p> <p>4.5 Malfunction</p> <p>4.6 Procedures in</p>	<p>4.1 Gun handling</p> <p>4.2 Managing stoppage and malfunctions</p> <p>4.3 Following procedures in live fire testing</p> <p>4.4 Use appropriate ammo in testing</p>

	4.4 Firearm is tested based on range safety rules 4.5 Malfunction is determined based on function test conducted	live fire testing 4.7 Types of ammo for testing	
--	---	--	--

RANGE OF VARIABLES

VARIABLE	RANGE
1. Technical issues	<p>This may include but not limited to:</p> <p>1.1 Pistol:</p> <ul style="list-style-type: none"> 1.1.1 Extractor problems 1.1.2 Slide stop wear 1.1.3 Bushing looseness 1.1.4 Feed ramp issue 1.1.5 Recoil spring 1.1.6 Sear and hammer engagement 1.1.7 Safety mechanism failure 1.1.8 Tolerance stack issues 1.1.9 Overly tight tolerance 1.1.10 Ammunition sensitivity <p>1.2 Malfunction and stoppages</p> <ul style="list-style-type: none"> 1.2.1 Run-away 1.2.2 Cook-off 1.2.3 Hang fire 1.2.4 Sluggish 1.2.5 Stoppage <p>1.3 Revolver:</p> <ul style="list-style-type: none"> 1.3.1 Cylinder alignment 1.3.2 Timing issues 1.3.3 Lacking mechanism failure 1.3.4 Extraction problem 1.3.5 Cracked frame/ cylinder crack 1.3.6 Trigger mechanism issue 1.3.7 Misaligned or damaged sight issues 1.3.8 Barrel obstruction 1.3.9 Rust and corrosion 1.3.10 1.10. Ammunition compatibility
2. Appropriate tools/ materials	<p>This may include but not limited to:</p> <ul style="list-style-type: none"> 2.1. Screwdrivers 2.2. Punch set brass/ steel 2.3. Plastic hammer 2.4. Wrenches 2.5. Pliers 2.6. Calipers 2.7. Armorer wrench 2.8. Torque wrench 2.9. Micrometer 2.10. Ruler 2.11. Tape measure 2.12. Cleaning rods/ brushes for firearms

	<ul style="list-style-type: none"> 2.13. Gun cleaning kits 2.14. Bore guide 2.15. Magnifying lens 2.16. Go and no-go gauge 2.17. Files 2.18. Vice 2.19. Head space armorers tools
3. Defective Firearm Parts	<p>This may include but not limited to:</p> <ul style="list-style-type: none"> 3.1. All parts of firearm <ul style="list-style-type: none"> 3.1.1 Triggers 3.1.2 Grips 3.1.3 Sights 3.1.4 Springs 3.1.5 Screws 3.1.6 Pins 3.1.7 Bushings
4. Resources	<p>This may include but not limited to:</p> <ul style="list-style-type: none"> 4.1. Ruler 4.2. Range finder 4.3. Ammunition 4.4. Target paper/sheets/board 4.5. Target frames 4.6. Gun tackers 4.7. Patching tapes 4.8. Spotting scope 4.9. Chrono equipment 4.10. Eyes and ears protection 4.11. Appropriate clothing 4.12. Closed shoes
5. PPE	<p>This may include but not limited to:</p> <ul style="list-style-type: none"> 5.1. Eye protection 5.2. Ear protection 5.3. Nose protection or respirator 5.4. Safety shoes 5.5. Ballistic apron 5.6. Gloves 5.7. Face protection

EVIDENCE GUIDE

<p>1. Critical aspect of competencies</p>	<p>Assessment required evidence that the candidate:</p> <ol style="list-style-type: none"> 1.1 Worn appropriate personal protective equipment based on OSH standards 1.2 Assessed technical issues related to disassembly, assembly, and function testing based on standard operating procedures or workplace policy 1.3 Prepared job order or directives based on technical inspection report 1.4 Identified appropriate tools and materials based on job order or directives 1.5 Prepared activity work plan based on job order or directives 1.6 Prepared cost estimates based on work plan 1.7 Communicated work plan to the customer based on workplace policy 1.8 Finalized work plan for implementation based on customer approval 1.9 Identified defective firearm parts based on job order or directives 1.10 Repaired or replaced defective firearm parts based on job order or directives 1.11 Cleaned and lubricated firearms based on standard operating procedures 1.12 Applied appropriate finish based on job order or directives 1.13 Prepared report with full documentation of actions taken based on standard operating procedures 1.14 Filed and stored reports and provided copies to concerned individuals based on standard operating procedures 1.15 Prepared job order or directives based on technical inspection conducted 1.16 Prepared resources for live fire testing based on standard operating procedures 1.17 Worn personal protective equipment properly based on safe firing test procedures 1.18 Demonstrated safety protocols based on OSH standards 1.19 Tested firearm based on range safety rules Determined malfunction based on function test conducted
<p>2. Resource Implications</p>	<p>The following resources should be provided:</p> <ol style="list-style-type: none"> 2.1 Live Model/ Live Firearm 2.2 Machines, equipment, tools, supplies and materials relevant to the activity to be performed 2.3 Treatment products 2.4 Actual treatment area with complete facilities

3. Methods of Assessment	Competency may be assessed through: 3.1 Demonstration with oral questioning 3.2 Direct observation 3.3 Written test 3.4 Portfolio
4. Context for Assessment	4.1 Competency may be assessed in treatment area or simulated treatment area 4.2 Assessment done during students return demonstration

UNIT OF COMPETENCY : MODIFY/ CUSTOMIZE FIREARMS

UNIT CODE : AB-MEE1374020722307

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitude required to modify/ customize firearms. It includes interviewing client to determine specific requirements/ desire, planning and executing the desired modifications and conducting parts fitting and fine tuning.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Interview client to determine specific requirements/ desire	1.1 Client is engaged using effective communication skills based on standard operating procedure 1.2 Variety of options in fabricating is provided based on latest technology and designs 1.3 Approval of the client is secured based on firearms law and regulations 1.4 Initial cost estimate and timeframe is presented based on gunsmith's recommendations	Communication 1.1 Effective communication Technology 1.2 Latest trend in new technologies in firearm 1.3 Available spare parts 1.4 Coating and finishings technical knowhow 1.5 Types of machines to be used modification/customization Environmental and Related Laws 1.6 Firearms law and regulations 1.7 Understanding terms and conditions between two (2) parties (gunsmith and customer) 1.8 Secure approval from the client based on existing and current firearms law and	1.1 Communication skills 1.2 Projecting pleasing personality 1.3 Patience 1.4 Negotiation skills 1.5 Sketching skills 1.6 Research skills 1.7 Computer operation skills 1.8 Skills in applying firearms law and regulations 1.9 Canvassing skills 1.10 Skills in estimating timeframe 1.11 Estimating cost 1.12 Courtesy

		<p>regulations</p> <p>Mathematics</p> <p>1.9 Costs estimate</p> <p>1.10 Standard price of parts</p> <p>1.11 Mensuration and calculation</p>	
2. Plan and execute the desired modifications	<p>2.1 Final cost estimate and timeframe are determined based on plan</p> <p>2.2 Tools, materials and equipment are identified based on plan</p> <p>2.3 Contingency plan is prepared based on standard operating procedure</p> <p>2.4 Machining work is performed based on plan</p>	<p>Mathematics</p> <p>2.1 Cost estimation</p> <p>2.2 Basic project management</p> <p>Technology</p> <p>2.3 Computer operations</p> <p>2.4 3D software</p> <p>2.5 CAD/CAM</p> <p>2.6 Technical knowhow on tools/ equipment</p> <p>Communication</p> <p>2.7 Make use of ARIN- (Anticipate, Recognize, Investigate, Neutralize) as guiding principle</p>	<p>2.1 Estimating cost</p> <p>2.2 Practicing project management</p> <p>2.3 Using computer</p> <p>2.4 Using 3D software</p> <p>2.5 Using CAD/CAM</p> <p>2.6 Performing welding</p> <p>2.7 Operating machines</p> <p>2.8 Anticipating/ recognizing investigating and neutralizing the issue</p>
3. Conduct parts fitting and fine tuning	<p>3.1 Parts placement is determined based on functionality</p> <p>3.2 Parts placement is determined based on specifications</p> <p>3.3 Parts placement is based on the sequence reflected on the user's manual</p> <p>3.4 Fine tune is performed based on required specification</p>	<p>Technology</p> <p>3.1 Assembly/ disassembly</p> <p>3.2 Latest trends and technology in firearm</p> <p>3.3 Tools, gauges and measuring instruments</p> <p>3.4 Available parts in the market</p> <p>3.5 Mechanical adjustment of firearm function</p>	<p>3.1 Using proper tools</p> <p>3.2 Using required gauges</p> <p>3.3 Using appropriate measuring instruments</p> <p>3.4 Familiarizing available parts in the market</p> <p>3.5 Applying latest trends and technology</p> <p>3.6 Applying</p>

			Mechanical adjustment of firearm function
--	--	--	---

RANGE OF VARIABLES

VARIABLE	RANGE
1. Functionality	May include but not limited to: 1.1 Feeding-Ejecting 1.2 Chambering-Cocking 1.3 Locking 1.4 Firing 1.5 Unlocking 1.6 Extracting
2. Specifications	May include but not limited to: 2.1 Based on job order 2.2 Functionality 2.3 Military
3. Machining Work	May include but not limited to: 3.1 Benchwork 3.2 Turning 3.3 Milling 3.4 Grinding
4. User's Manual	May include but not limited to: 4.1 Rifle 4.2 Pistol 4.3 Revolver 4.4 Shotgun 4.5 Carbine
4. Gun Model	May include but not limited to: 4.1 Single-action, recoil-operated, semi-automatic pistol (1911) 4.2 Clamshell and Solid frame Striker-fired pistol 4.3 Revolver 4.4 Shot gun (Pump-action, and semi-automatic) 4.5 Rifle (Bolt action, and semi-automatic) 4.6 Semi-automatic carbine (M4)
5. Resources	May include but not limited to: 5.1 Ruler 5.2 Range finder 5.3 Ammunition 5.4 Target paper/ sheets/board 5.5 Target frames 5.6 Gun tuckers

	<p>5.7 Patching tapes</p> <p>5.8 Spotting scope</p> <p>5.9 Chrono equipment</p>
6. PPE	<p>May include but not limited to:</p> <p>6.1 Eyes and ears protection</p> <p>6.2 Appropriate clothing</p> <p>6.3 Closed shoes</p>

EVIDENCE GUIDE

1. Critical aspect of competencies	<p>Assessment required evidence that the candidate:</p> <p>1.1 Engaged client using effective communication skills based on standard operating procedures</p> <p>1.2 Provided a variety of fabrication options based on latest technology and designs</p> <p>1.3 Secured client approval based on firearms laws and regulations</p> <p>1.4 Presented initial cost estimate and timeframe based on gunsmith recommendations</p> <p>1.5 Determined final cost estimate and timeframe based on approved plan</p> <p>1.6 Identified tools, materials, and equipment based on plan</p> <p>1.7 Prepared contingency plan based on standard operating procedures</p> <p>1.8 Performed machining work based on plan</p> <p>1.9 Determined parts placement based on functionality</p> <p>1.10 Determined parts placement based on specifications</p> <p>1.11 Aligned parts placement with sequence reflected in the user's manual</p> <p>1.12 Performed fine tuning based on required specifications</p>
2. Resource Implications	<p>The following resources should be provided:</p> <p>2.1 Live Model</p> <p>2.2 Machines, equipment, tools, supplies and materials relevant to the activity to be performed</p> <p>2.3 Treatment products</p> <p>2.4 Actual treatment area with complete facilities</p>

3. Methods of Assessment	Competency may be assessed through: 3.5 Demonstration with oral questioning 3.6 Direct observation 3.7 Written test 3.8 Portfolio
4. Context for Assessment	4.3 Competency may be assessed in treatment area or simulated treatment area 4.4 Assessment done during students return demonstration

GLOSSARY OF TERMS

3D SOFTWARE	computer programs used in creating three (3) dimensional representations of firearms and other parts
ASSESSMENT AREA	a work area where firearms are evaluated
CAD/CAM	Computer-Aided Design and Computer-Aided Manufacturing software used to program CNC machines
FABRICATING	creating or modifying firearm parts using techniques like machining, welding, or casting
FINE TUNING	the adjustment of firearm components to enhance its accuracy and/or performance
FIREARMS COATING	the application of a protective or decorative coating to firearms (e.g. cerakote, duracoat, hard chrome, nickel plating, hard anodizing, PECVD and Parkerizing)
FITTING OF PARTS	the process of carefully adjusting and calibrating the firearm parts to ensure it fits correctly and functions properly
JAM MANAGEMENT	the ability to diagnose and clear a firearm stoppage or malfunction during firing
LATEST TRENDS AND TECHNOLOGY	refers to advancements in firearm parts, designs, and materials
LIVE FIRE TESTING	a process of firing a firearm to evaluate its functionality and accuracy
LIVE MODEL	Also designated as a live firearm is a weapon that expels a projectile by the force of an explosive, for example a gunpowder, as designed to be used for firing live ammunition
MAINTENANCE OPERATIONS MANUAL	a comprehensive guide for the maintenance and repair of a particular firearm model
MODIFY/CUSTOMIZE FIREARMS	is an alteration or enhancement of firearms to meet specific customer needs or preferences in adherence to law. This may include additional machining, accessories, and finishing process.
PRE-ASSESSMENT ACTIVITIES	is a preliminary step done before a firearm undergoes repair or refurbishment. This includes firearm verification, thorough technical inspection, disassembly, and cleaning of the firearm.
TECHNICAL ISSUES	is a malfunction or defect with a firearm that requires specialized knowledge and skills to diagnose and repair
TREATMENT PRODUCTS	are materials used to coat or finish a firearm including chemicals, paints, and other protective coatings

ACKNOWLEDGEMENTS

The Technical Education and Skills Development Authority (TESDA) would like to recognize the commitment of the industry stakeholders and Area-Based and Demand Driven (ABDD) TVET Focals who provided their time and expertise for the development of this Competency Standard.

THE TECHNICAL EXPERT PANEL (TEP)

<p>RAY B. DIAMANTE Armscor Global Defense, Inc. 2 Armscor Avenue, Brgy. Fortune, Marikina City</p>	<p>COL. FABIAN MARCO H. VERZOSA (Ret.) Armscor Global Defense, Inc. 2 Armscor Avenue, Brgy. Fortune, Marikina City</p>
<p>ATTY. KARELL MARIE LASCANO Armscor Global Defense, Inc. 2 Armscor Avenue, Brgy. Fortune, Marikina City</p>	<p>JAY SANTAMARIA Armscor Global Defense, Inc. 2 Armscor Avenue, Brgy. Fortune, Marikina City</p>
<p>JIESANT L. LIMET Armscor Global Defense, Inc. 2 Armscor Avenue, Brgy. Fortune, Marikina City</p>	<p>MICHAEL M. SANTOS Armscor Global Defense, Inc. 2 Armscor Avenue, Brgy. Fortune, Marikina City</p>
<p>JOSELITO CATANES Armscor Global Defense, Inc. 2 Armscor Avenue, Brgy. Fortune, Marikina City</p>	<p>PAT TEODY A BALTERO Training Police Non-Commissioned Officers (PNCO) Logistics Support Service Philippine National Police Headquarters, 1st Lt Alfabeto, Quezon City</p>
<p>PAT MARVIE P MAGALLANO Logistics Support Service Philippine National Police Headquarters, 1st Lt Alfabeto, Quezon City</p>	<p>PSMS LEO ANGELO ORNEDO Warehouse Police Non-Commissioned Officer (PNCO) Logistics Support Service Philippine National Police Headquarters, 1st Lt Alfabeto, Quezon City</p>
<p>MAJ KATHERINE DELIMA Army Support Command (ASCOM) Philippine Army Camp Aguinaldo, Quezon City</p>	<p>CPL RONNEL PARANE Army Support Command (ASCOM) Philippine Army Camp Aguinaldo, Quezon City</p>

<p>SSG SHERWIN L REAS Staff Sergeant Army Support Command (ASCOM) Philippine Army Camp Aguinaldo, Quezon City</p>	<p>SSG ALVIN JUN R DEOCARIS Staff Sergeant Army Support Command (ASCOM) Philippine Army Camp Aguinaldo, Quezon City</p>
<p>SSG CLARO P RECTO Staff Sergeant Army Support Command (ASCOM) Philippine Army Camp Aguinaldo, Quezon City</p>	<p>SGT JOSEMARIE P PALATTAO Sergeant Army Support Command (ASCOM) Philippine Army Camp Aguinaldo, Quezon City</p>
<p>JESSCKA LOI ZAGALA TVET Department Pamantasan ng Lungsod ng Marikina Concepcion Uno, Marikina City</p>	

NCR ABDD TVET FOCALS

<p>LIZA MARIE V. GAWE TESDA-PaMaMariSan District 2nd Floor, National TVET Trainers Academy Bldg., Mayor Chanyungco Street., Brgy. Sta. Elena, Marikina City</p>	<p>NELSON T. EFREN TESDA-PasMak District TESDA Building 15, TESDA Complex East Service Road, South Luzon Expressway, Fort Bonifacio, Taguig City</p>
<p>CHRISTIAN JOSEPH C. AGUILAR TESDA-PaMaMariSan Training and Assessment Center 3rd Floor, National TVET Trainers Academy Bldg., Mayor Chanyungco Street., Brgy. Sta. Elena, Marikina City</p>	