

K to 12 TECHNOLOGY AND LIVELIHOOD EDUCATION

**INDUSTRIAL ARTS – SHIELDED METAL ARC WELDING
(Exploratory)**

Content Standard	Performance Standard	Learning Competencies	Project/ Activities	Assessment	Duration
LESSON 1: USING HAND TOOLS AND EQUIPMENT					
<p><i>Demonstrate understanding of/on:</i></p> <ul style="list-style-type: none"> • Identifying tools and its function • Selecting appropriate hand tools 	<ol style="list-style-type: none"> 1. Appropriate hand tools are selected appropriate for the requirements of the task. 2. Unsafe or defective tools are identified and marked for repair according to procedure. 	<p>LO1. Select and classify hand tools.</p>	<ol style="list-style-type: none"> 1. Selection and classification of hand tools according to job requirements 	<ul style="list-style-type: none"> • Written exam • Performance test 	<p>6 hours</p>
<ul style="list-style-type: none"> • Performing tasks <ul style="list-style-type: none"> ○ Adjusting ○ Dismantling ○ Assembling ○ Finishing of item or components 	<ol style="list-style-type: none"> 1. Task is performed in accordance with company or industry safety procedure. 	<p>LO2. Use hand tools.</p>	<ol style="list-style-type: none"> 1. Proper use and care of tools 	<ul style="list-style-type: none"> • Written Exam 	
<ul style="list-style-type: none"> • Conducting routine maintenance <ul style="list-style-type: none"> ○ Lubricating ○ Tightening ○ Repairing simple tool ○ Hand sharpening ○ Cleaning • Storing hand tools properly 	<ol style="list-style-type: none"> 1. Routine maintenance of hand tools is undertaken according to standard operating procedures, principles and techniques. 2. Hand tools are stored in designated location in accordance with manufacturer's instruction/standard operating procedure. 	<p>LO3. Maintain hand tools.</p>	<ol style="list-style-type: none"> 1. Identification of unserviceable or defective tools for repair according to procedure 	<ul style="list-style-type: none"> • Written Exam 	

K to 12 TECHNOLOGY AND LIVELIHOOD EDUCATION

**INDUSTRIAL ARTS – SHIELDED METAL ARC WELDING
(Exploratory)**

Content Standard	Performance Standard	Learning Competencies	Project/ Activities	Assessment	Duration
LESSON 2: MENSURATION AND CALCULATION					
<p><i>Demonstrate understanding of/on:</i></p> <ul style="list-style-type: none"> • Performing mathematical operations <ul style="list-style-type: none"> ○ Subtraction ○ Addition ○ Multiplication ○ Division 	<ol style="list-style-type: none"> 1. Simple calculations involving whole numbers, mixed numbers, fraction and decimal are performed using the four fundamental operations. 	LO1. Perform four fundamental operations.	<ol style="list-style-type: none"> 1. Computation involving the four fundamental operations (2-3 digits) 	<ul style="list-style-type: none"> • Written/oral • Performance test 	4 hours
<ul style="list-style-type: none"> • Conversion of English to metric (vice versa) <ul style="list-style-type: none"> ○ English and metric system of measurements 	<ol style="list-style-type: none"> 1. Units are converted to the required figure using the given formulae. 2. English measurements are converted to metric measurements according to procedure. 	LO2. Perform conversion of units.	<ol style="list-style-type: none"> 1. Conversion of units from English to metric system (vice versa). <ul style="list-style-type: none"> • Inches-centimeter • Meter-yard, • Etc. 	<ul style="list-style-type: none"> • Written Exam 	
<ul style="list-style-type: none"> • Computing ratio and proportion 	<ol style="list-style-type: none"> 1. Percentages are computed using appropriate formula. 	LO3. Compute percentage and ratio.	<ol style="list-style-type: none"> 1. Computation of ratio and proportion. 	<ul style="list-style-type: none"> • Written Exam 	

K to 12 TECHNOLOGY AND LIVELIHOOD EDUCATION

**INDUSTRIAL ARTS – SHIELDED METAL ARC WELDING
(Exploratory)**

Content Standard	Performance Standard	Learning Competencies	Project/ Activities	Assessment	Duration
LESSON 3: INTERPRETING PLANS AND DRAWINGS					
<p><i>Demonstrate understanding of/on:</i></p> <ul style="list-style-type: none"> Constructing alphabet of lines and applications Drawing specifications and dimensions 	<p>1. Alphabet of lines is identified according to ISO (International Standard Organization).</p>	<p>LO1. Identify standard alphabet of lines.</p>	<p>1. Drawing the different alphabet of lines.</p>	<ul style="list-style-type: none"> Written Exam Performance test 	<p>6 hours</p>
<ul style="list-style-type: none"> Interpreting welding joints and symbols 	<p>1. Welding joints and symbols are interpreted according to drawing standard</p>	<p>LO2. Interpret standard drawing symbols.</p>	<p>1. Drawing the standard joints and symbols.</p>	<ul style="list-style-type: none"> Written Exam 	

K to 12 TECHNOLOGY AND LIVELIHOOD EDUCATION

**INDUSTRIAL ARTS – SHIELDED METAL ARC WELDING
(Exploratory)**

Content Standard	Performance Standard	Learning Competencies	Project/ Activities	Assessment	Duration
LESSON 4: APPLYING SAFETY PRACTICES					
<p><i>Demonstrate understanding of/on:</i></p> <ul style="list-style-type: none"> Identifying hazard to be avoided in welding Adhering to welding safety signs and symbols 	<ol style="list-style-type: none"> Hazards are identified correctly in accordance with OHS (occupational health and safety) procedures. Safety signs and symbols are identified and adhered to in accordance with workplace safety procedure. 	LO1. Identify hazardous area.	<ol style="list-style-type: none"> Drawing safety signs and symbols 	<ul style="list-style-type: none"> Written exam 	6 hours
<ul style="list-style-type: none"> Using personal protective equipment (PPE) properly for different welding operations 	<ol style="list-style-type: none"> Personal protective clothing/equipment (PPE) as per job requirements are identified. Proper wearing of PPE is properly observed in accordance with workplace safety policies. 	LO2. Use personal protective clothing and devices.	<ol style="list-style-type: none"> Proper wearing of PPE 	<ul style="list-style-type: none"> Written exam 	
<ul style="list-style-type: none"> Safe handling of tools, equipment and materials 	<ol style="list-style-type: none"> Safe handling of tools, equipment and materials is properly observed in accordance with OHS requirements and industry/ company policies. Safety label and tag of tools and equipment are strictly followed. 	LO3. Perform safe handling of tools, equipment and materials	<ol style="list-style-type: none"> Proper use and care of power tools 	<ul style="list-style-type: none"> Written exam 	

K to 12 TECHNOLOGY AND LIVELIHOOD EDUCATION

**INDUSTRIAL ARTS – SHIELDED METAL ARC WELDING
(Exploratory)**

Content Standard	Performance Standard	Learning Competencies	Project/ Activities	Assessment	Duration
<ul style="list-style-type: none"> • Different types of injuries • Performing first aid treatment procedure • Accessing emergency hotline number and offices 	<ol style="list-style-type: none"> 1. First aid treatments of injuries are carried out according to recommended procedures. 2. Emergency hotline and proper authority are accessed and contacted in accordance with workplace procedure. 	LO4. Perform first aid.	<ol style="list-style-type: none"> 1. Performing first aid treatments: <ul style="list-style-type: none"> • Thermal burn • Electrical burn 	<ul style="list-style-type: none"> • Written/oral exam 	
<ul style="list-style-type: none"> • Using different types of firefighting equipment 	<ol style="list-style-type: none"> 1. Fire fighting equipment is identified according to types/source of fires. 2. Use of fire fighting equipment is demonstrated in accordance with manufacturer's instructions. 	LO5. Use fire extinguisher	<ol style="list-style-type: none"> 1. Carrying out fire drill. 	<ul style="list-style-type: none"> • Written • Simple Q & A 	

K to 12 TECHNOLOGY AND LIVELIHOOD EDUCATION

**INDUSTRIAL ARTS – SHIELDED METAL ARC WELDING
(Exploratory)**

Content Standard	Performance Standard	Learning Competencies	Project/ Activities	Assessment	Duration
LESSON 5: PRACTICING OCCUPATIONAL HEALTH AND SAFETY PROCEDURES					
<i>Demonstrate understanding of/on:</i> <ul style="list-style-type: none"> Identifying hazards and risks Following OHS indicators 	1. Workplace hazards and risks are identified and clearly explained.	LO1. Identify hazards and risks areas.	1. Making hazards and risks signs and notifications.	<ul style="list-style-type: none"> Written test Performance test 	4 hours
<ul style="list-style-type: none"> Determining effects of hazards in the workplace 	1. Effects of hazards are determined.	LO2. Evaluate hazards and risks.		<ul style="list-style-type: none"> Interview Written examination 	
<ul style="list-style-type: none"> Following procedures in controlling hazards and risk in the workplace 	1. Effective hazard and risk prevention and control are observed.	LO3. Control hazards and risks.	1. Carrying out emergency drill.	<ul style="list-style-type: none"> Written examination Interview 	