### LESSON 1: USING HAND TOOLS AND EQUIPMENT

#### Content Standard
Demonstrate understanding of/on:
- Identifying tools and its function
- Selecting appropriate hand tools

#### Performance Standard
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.

#### Learning Competencies
- LO1. Select and classify hand tools.

#### Project/Activities
- Performing tasks
  - Adjusting
  - Dismantling
  - Assembling
  - Finishing of item or components

#### Assessment
- Written exam
- Performance test

#### Duration
- 6 hours

#### Activities
- Task is performed in accordance with company or industry safety procedure.
- Proper use and care of tools
- Routine maintenance of hand tools is undertaken according to standard operating procedures, principles and techniques.
- Hand tools are stored in designated location in accordance with manufacturer’s instruction/standard operating procedure.
- Identification of unserviceable or defective tools for repair according to procedure.
### LESSON 2: MENSURATION AND CALCULATION

**Demonstrate understanding of/on:**

- Performing mathematical operations
  - Subtraction
  - Addition
  - Multiplication
  - Division

  1. Simple calculations involving whole numbers, mixed numbers, fraction and decimal are performed using the four fundamental operations.

  **LO1.** Perform four fundamental operations.

  1. Computation involving the four fundamental operations (2-3 digits)

  **Assessment:**
  - Written/oral
  - Performance test

  **Duration:** 4 hours

- Conversion of English to metric (vice versa)
  - English and metric system of measurements

  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.

  1. Conversion of units from English to metric system (vice versa).
    - Inches-centimeter
    - Meter-yard,
    - Etc.

  **Assessment:**
  - Written Exam

- Computing ratio and proportion

  1. Percentages are computed using appropriate formula.

  **LO3.** Compute percentage and ratio.

  1. Computation of ratio and proportion.

  **Assessment:**
  - Written Exam

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### LESSON 3: INTERPRETING PLANS AND DRAWINGS

**Demonstrate understanding of/on:**

- Constructing alphabet of lines and applications
- Drawing specifications and dimensions

<table>
<thead>
<tr>
<th>Content Standard</th>
<th>Performance Standard</th>
<th>Learning Competencies</th>
<th>Project/ Activities</th>
<th>Assessment</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Interpreting welding joints and symbols</td>
<td>1. Alphabet of lines is identified according to ISO (International Standard Organization).</td>
<td>LO1. Identify standard alphabet of lines.</td>
<td>1. Drawing the different alphabet of lines.</td>
<td>Written Exam, Performance test</td>
<td>6 hours</td>
</tr>
<tr>
<td>• Interpreting welding joints and symbols</td>
<td>1. Welding joints and symbols are interpreted according to drawing standard</td>
<td>LO2. Interpret standard drawing symbols.</td>
<td>1. Drawing the standard joints and symbols.</td>
<td>Written Exam</td>
<td></td>
</tr>
</tbody>
</table>
## LESSON 4: APPLYING SAFETY PRACTICES

### Demonstrate understanding of:

- Identifying hazard to be avoided in welding
- Adhering to welding safety signs and symbols

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<tbody>
<tr>
<td>LESSON 4</td>
<td>APPLYING SAFETY PRACTICES</td>
<td>LO1. Identify hazardous area.</td>
<td>1. Drawing safety signs and symbols</td>
<td>Written exam</td>
<td>6 hours</td>
</tr>
</tbody>
</table>
| LO1. Identify hazardous area. | 1. Hazards are identified correctly in accordance with OHS (occupational health and safety) procedures.  
2. Safety signs and symbols are identified and adhered to in accordance with workplace safety procedure. | 1. Drawing safety signs and symbols | Written exam | 6 hours |
| LO2. Use personal protective clothing and devices. | 1. Personal protective clothing/equipment (PPE) as per job requirements are identified.  
2. Proper wearing of PPE is properly observed in accordance with workplace safety policies. | 1. Proper wearing of PPE | Written exam | 6 hours |
| LO3. Perform safe handling of tools, equipment and materials | 1. Safe handling of tools, equipment and materials is properly observed in accordance with OHS requirements and industry/company policies.  
2. Safety label and tag of tools and equipment are strictly followed. | 1. Proper use and care of power tools | Written exam | 6 hours |

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# K to 12 TECHNOLOGY AND LIVELIHOOD EDUCATION

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

<table>
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</tr>
</thead>
</table>
| • Different types of injuries                                                     | 1. First aid treatments of injuries are carried out according to recommended procedures.  
• Performing first aid treatment procedure  
• Accessing emergency hotline number and offices                                   | LO4. Perform first aid.                                                                | 1. Performing first aid treatments:  
• Thermal burn  
• Electrical burn                                                                 | • Written/oral exam                                                                 |          |
|                                                                                  | 2. Emergency hotline and proper authority are accessed and contacted in accordance with workplace procedure. |                                      |                                                          |                                 |          |
| • Using different types of firefighting equipment                                 | 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.                                                          | 1. Carrying out fire drill.                                                      | • Written  
• Simple Q & A                                                                 |          |
## LESSON 5: PRACTICING OCCUPATIONAL HEALTH AND SAFETY PROCEDURES

### Content Standard
- Identifying hazards and risks
- Following OHS indicators
- Determining effects of hazards in the workplace
- Following procedures in controlling hazards and risk in the workplace

### Performance Standard

<table>
<thead>
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</tr>
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<tbody>
<tr>
<td>Identifying hazards and risks</td>
<td>1. Workplace hazards and risks are identified and clearly explained.</td>
<td>LO1. Identify hazards and risks areas.</td>
<td>1. Making hazards and risks signs and notifications.</td>
<td>Written test • Performance test</td>
<td>4 hours</td>
</tr>
<tr>
<td>Following OHS indicators</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Determining effects of hazards in the workplace</td>
<td>1. Effects of hazards are determined.</td>
<td>LO2. Evaluate hazards and risks.</td>
<td></td>
<td>Interview • Written examination</td>
<td></td>
</tr>
<tr>
<td>Following procedures in controlling hazards and risk in the workplace</td>
<td>1. Effective hazard and risk prevention and control are observed.</td>
<td>LO3. Control hazards and risks.</td>
<td>1. Carrying out emergency drill.</td>
<td>Written examination • Interview</td>
<td></td>
</tr>
</tbody>
</table>