

## OXY-ACETYLENE WELDING

**UNIT CODE: ENG/CU/WEL/CR/01/3/A**

### Relationship to Occupational Standards

This unit of learning addresses the unit of competency: perform oxy-acetylene welding

**Duration of Unit:** 80 hours

### Unit Description

This unit standard is intended for those who carry out oxy-acetylene gas welding & cutting, and soldering operations. It specifies competencies required to set up and carry out welding, cutting and/ or soldering tasks while observing appropriate safety.

### Summary of Learning Outcomes

1. Set up oxy-acetylene welding equipment and materials
2. Carry out oxy-acetylene welding
3. Set up oxy-acetylene cutting equipment and materials
4. Carry out oxy-acetylene cutting operation
5. Set up soldering equipment and materials
6. Carry out soldering process

### Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Set up oxy-acetylene welding equipment and materials	<ul style="list-style-type: none"><li>• Safety in welding workshop<ul style="list-style-type: none"><li>• Workplace safety</li><li>• Welding area safety – checklist</li><li>• Fire fighting</li><li>• Workplace housekeeping (before, during and after working - workstation cleaning)</li><li>• Care and storage of tools and equipment, and waste disposal</li></ul></li><li>• Materials, tools and equipment<ul style="list-style-type: none"><li>• Use of carbon steels, Stainless, and Aluminium and aluminium- alloys</li></ul></li></ul>	<ul style="list-style-type: none"><li>• Observation checklist</li><li>• Oral questioning</li><li>• Written tests</li><li>• Product checklist</li></ul>

	<ul style="list-style-type: none"> <li>• Oxygen and acetylene gases</li> <li>• Use of filler metals</li> <li>• Filler rods for welding carbon steels</li> <li>• Filler rods for soldering/braze welding aluminium</li> <li>• Filler metals for braze stainless steel</li> <li>• Tools and equipment</li> <li>• Tools essential in welding/ cutting/ soldering works <ul style="list-style-type: none"> <li>• Use</li> <li>• Care and maintenance</li> </ul> </li> <li>• OAW equipment and accessories</li> <li>• Soldering/ brazing equipment and accessories</li> <li>• Setting up steps; OAW equipment, Cutting equipment and soldering/brazing</li> <li>• Forms of finished material supply <ul style="list-style-type: none"> <li>• Plates</li> <li>• Tubes</li> <li>• Sheets</li> <li>• Pipes</li> <li>• Bars</li> </ul> </li> <li>• Joint geometry preparation <ul style="list-style-type: none"> <li>• Joints in gas welding</li> <li>• Joints in soldering/brazing</li> </ul> </li> </ul>	
<p>2. Carry out gas welding</p>	<ul style="list-style-type: none"> <li>• Procedure; lighting and shutting off oxy-acetylene welding flame</li> <li>• Flame adjustment <ul style="list-style-type: none"> <li>• Types of flames</li> <li>• Backfiring and flashback</li> </ul> </li> <li>• Oxy-acetylene welding equipment and accessories <ul style="list-style-type: none"> <li>• Cylinders</li> <li>• Hose and hose connections</li> <li>• Pressure regulators</li> <li>• Torches</li> <li>• Nozzles</li> <li>• Nozzle cleaners</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Observation checklist</li> <li>• Product checklist</li> <li>• Oral questioning</li> <li>• Written tests</li> <li>• Project checklist</li> </ul>

	<ul style="list-style-type: none"> <li>• Flashback arrestors</li> <li>• Spark lighter</li> <li>• Spindle key</li> <li>• Gas welding techniques and patterns</li> <li>• Gas welding defects, causes and remedies</li> <li>• Application of gas welding</li> </ul>	
3. Set up oxy-acetylene cutting equipment and materials	<ul style="list-style-type: none"> <li>• Observation of safety in oxy-acetylene cutting</li> <li>• Selection of materials, equipment and accessories</li> <li>• Setting up oxy-acetylene cutting torch</li> </ul>	<ul style="list-style-type: none"> <li>• Observation checklist</li> <li>• Oral questioning</li> <li>• Written tests</li> </ul>
4. Carry out gas cutting operation	<ul style="list-style-type: none"> <li>• Observation of safety in gas cutting</li> <li>• Gas cutting equipment and accessories</li> <li>• Gas cutting process</li> <li>• Gas cutting defects, causes and remedies</li> <li>• Features of a quality kerf</li> </ul>	<ul style="list-style-type: none"> <li>• Observation checklist</li> <li>• Product checklist</li> <li>• Oral questioning</li> <li>• Written tests</li> <li>• Project checklist</li> </ul>
5. Set up soldering equipment and materials	<ul style="list-style-type: none"> <li>• Selection of materials, equipment and accessories</li> <li>• Setting up soldering equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Observation</li> <li>• Oral questioning</li> <li>• Written tests</li> </ul>
6. Carry out soldering process	<ul style="list-style-type: none"> <li>• Safety in soldering</li> <li>• Soldering processes <ul style="list-style-type: none"> <li>• Soft soldering</li> <li>• Hard soldering (brazing)</li> </ul> </li> <li>• Use of solders and fluxes</li> <li>• Application of soldering</li> </ul>	<ul style="list-style-type: none"> <li>• Observation checklist</li> <li>• Product checklist</li> <li>• Oral questioning</li> <li>• Written tests</li> <li>• Project checklist</li> </ul>

### Suggested Methods of Instruction

- Facilitation of theory by trainer
- Demonstration of task by trainer
- Practice by trainee
- Viewing videos of soldering, brazing, oxy-acetylene welding and cutting process

- Industrial visits
- Projects by Trainees

### **Recommended Resources**

- Personal Protective Equipment (PPE)
  - Gas /soldering welding goggles
  - Special fire proof head cap
  - Safety boots
  - Gas welding gloves
  - welding Apron/ overall
- Soldering tools and equipment
- Welding bay /booth
- Gas manifold system/ trolleys
- Gas welding equipment and accessories
- Gas cutting equipment and accessories
- Gas welding consumables
  - Filler metals
  - fluxs
- Gas welding materials
  - Carbon steels
- Soldering and brazing materials
  - Carbon steels
  - Aluminium
  - Stainless steel
- Soldering consumables
  - Soldering flux
  - Brazing rods and solders
  - Brazing fluxes
- Soldering and gas welding video clips

easyvet.com