

## Appendix A

### **WORK PROCESS SCHEDULE WELDER-ARC**

O\*NET/SOC CODE: 51-4121.02 RAPIDS CODE: 0620

This schedule is attached to and a part of these Standards for the above identified occupation.

**1. TERM OF APPRENTICESHIP**

The term of the occupation shall be 4 Year with an OJL attainment of 8000 hours supplemented by the required hours of related instruction.

**2. RATIO OF APPRENTICES TO MENTORS**

One (1) Apprentice may be employed in each department and/or jobsite employing one (1) qualified Mentor.

**3. APPRENTICE WAGE SCHEDULE**

Apprentices shall be paid a progressively increasing schedule of wages based on a percentage of the current Mentor wage rate.

*Note: Sponsoring Employers will show their Mentor wage rate on the Employer Acceptance Agreement*

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**4. SCHEDULE OF WORK EXPERIENCE** (See attached Work Process Schedule)

The Sponsor may modify the work processes to meet local needs prior to submitting these Standards to the appropriate Registration Agency for approval.

**5. SCHEDULE OF RELATED INSTRUCTION** (See attached Related Instruction Outline)

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**Description:** Welds together metal components of products, such as pipelines, automobiles, boilers, ships, aircraft, and mobile homes, as specified by layout, blueprints, diagram, work order, welding procedures, or oral instructions, using electric arc-welding equipment: Obtains specified electrode and inserts electrode into portable holder or threads consumable electrode wire through portable welding gun. Connects cables from welding unit to obtain amperage, voltage, slope, and pulse. Starts power supply to produce electric current. Strikes (forms) arc which generates heat to melt and deposit metal from electrode to workpiece and join edges of workpiece. Manually guides electrode or gun along weld line, maintaining length of arc and speed of movement to form specified depth of fusion and bead, as judged from color of metal, sound of weld, and size of molten puddle. Welds in flat, horizontal, vertical, or overhead positions. Examines weld for bead size and other specifications. May manually apply filler rod to supply weld metal. May clean or degrease weld joint or workpiece, using wire brush, portable grinder, or chemical bath. May repair broken or cracked parts and fill holes. May prepare broken parts for welding by grooving or scarfing surfaces. May chip off excess weld, slag, and spatter, using hand scraper or power chipper. May preheat workpiece, using hand torch or heating furnace. May position and clamp work pieces together or assemble them in jig or fixture. May tack assemblies together. May cut metal plates or structural shapes. May operate other machine shop equipment to prepare components for welding. Important variations include types of metals welded, sub processes used, trade name of equipment used, work site (in-plant, job shop, construction site, shipyard), method of application (manual, semiautomatic), high-production or custom, level of ambidexterity required, type of joints welded (seam, spot, butt). May be required to pass employer performance tests or standard tests to meet certification standards of governmental agencies or professional and technical associations.

### ON-THE-JOB TRAINING:

### APPROXIMATE HOURS

- 
- |  |      |
|--|------|
| A. ....  | 1300 |
| 1. Blueprint reading and sketching   |      |
| 2. Use and handling of oxyacetylene gas  |      |
| 3. Operate torch, simple cutting and lancing   |      |
| 4. Safety  |      |
| B. ....  | 1350 |
| 1. Prepare jobs  |      |
| 2. Machine setting and arc conditions  |      |
| 3. Adjust torch and gauges for proper flame conditions such<br>as neutral, reducing and oxidizing flame, rubber arc, short force<br>full arc, tiny, concentrated, depositing and digging arc |      |
| 4. Simple welding (arc, acetylene)   |      |
| 5. Safety  |      |

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### APPROXIMATE HOURS

C.....	1350
1. Downhand welding	
2. Vertical, horizontal, overhead	
3. Pipe welding - all positions	
4. Bead, deep groove, lap joint, butt joint corner and fillet welding with bare and coated mild steel rod arc and acetylene	
5. Safety	
D.....	1350
1. Special practices	
2. Arc cutting, carbon electrode	
3. Carbon arc test welding	
4. Cast iron, medium carbon and high carbon	
5. Automatic submerged arc welding	
6. Safety	
E.....	1350
1. Hard surfacing (arc, acetylene)	
2. Tool steel (hot and cold working)	
3. Low alloys (arc and acetylene)	
4. High alloys (arc and acetylene)	
5. Martensitic, ferritic, austenitic	
6. Safety	
F.....	1300
1. Non-ferrous alloys	
2. All types of welding at hand (arc and acetylene)	
3. Safety	
<b>TOTAL HOURS</b>	<b>8000</b>

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### RELATED INSTRUCTION WELDER-ARC

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Related instruction - This instruction may include, but not be limited to:

*Note:* Due to regional and local code differences and climate conditions, duration of instructional competencies/modules are suggested estimates.

	<b>Hours</b>
Mathematics for Welding Technicians	54
Introduction to Welding	90
Introduction to Welding Technology	90
Welding Inspection	36
Shielding Metal Arc 1 Welding (Stick)	90
Shielding Metal Arc 2 Welding (Stick)	90
Advanced Pipe Welding in Shielded Metal Arc	90
Gas Tungsten Arc Welding	90
Gas Tungsten Arc Welding (Pipe)	90
Gas Arc Welding: Semi Automatic Processes	90
Gas arc Welding: Ferrous and non-Ferrous Metals	72
Flux Core Arc Welding	90
Symbol Reading, Layout and Fabrication	90
	<b>TOTAL HOURS</b>
	<b>1062</b>