

Appendix A

**WORK PROCESS SCHEDULE
WELDING-MACHINE OPERATOR, ARC
O*NET/SOC CODE: 51-4122.01 RAPIDS CODE: 0945**

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 3 Year with an OJL attainment of 6000 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

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: Sets up and operates arc welding machine that welds together parts of fabricated metal products, as specified by blueprints, layouts, welding procedures, and operating charts: Welds flat, cylindrical, or irregular parts that may be clamped, tack-welded, or otherwise positioned. May position weld line parallel to carriage. Turns cranks or pushes buttons to align electrode on welding head over weld joint to weld linear joints, or adjust length of radial arm to position electrode over weld joint when welding radial joints. Clamps cylindrical work pieces onto turning rolls under stationary head to weld circular joints. Threads specified electrode wire from reel through feed rolls and welding head. Turns welding head to set specified angle of electrode. May fill hopper with specified flux and direct nozzle or gravity feed over weld line, or adjust shielding gas or gas mixture flow rate. Turns knobs to set current, voltage, and slope, and synchronize feed of wire and flux with speed of welding action. May set limit switch which automatically stops machine at end of weld. Starts machine and observes meters and gauges, or observes welding action for compliance with procedures. Visually examines welds for adherence to specifications. May grind welded surfaces for penetrant test. Adjusts machine setup to vary size, location, and penetration of bead. May install track template to weld irregularly shaped seams. May make trial run before welding and record setup and operating data. May layout, fit, and tack work pieces together. May preheat workpiece, using hand torch or heating furnace. May reweld defective joints, using hand-welding equipment. May remove surplus slag, flux, and spatter, using brush, portable grinder, and hand scraper. May operate machine equipped with two or more heads.

ON-THE-JOB TRAINING:

APPROXIMATE HOURS

A. Gas Welding (Heli-Arc)	2100
1. Set-up and operation of equipment	
2. Selection of proper rods and fluxes	
3. Welding of hub equipment - (molds, trimmers, etc)	
4. Weld repair of press forming equipment (molds, rings, plungers, etc.)	
5. Pre-heat and post-heat of glass forming equipment	
B. Stud Welding	240
1. Set-up and operation of electric-arc stud welder	
2. Set-up and operation of capacitor discharge stud welder	
3. Locating stud position by use of templates and drawings	
C. Oxygen, Acetylene Welding	600
1. Use and maintenance of oxygen/acetylene welding equipment	
2. Weld repairing super alloy and precision case mold equipment	

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	APPROXIMATE HOURS
D. Fusewelding (Powder)	600
1. Use and maintenance of fusewelding torch and related equipment	
2. Repairs to cast iron mold equipment where build-up type repair or alteration is required	
E. Plasma Spray	1800
1. Set-up as required for mold, roll, plunger, and related forming equipment spraying	
2. Dimensional checks of items prior to, between coatings, and after coating	
3. Spraying techniques in horizontal and vertical positions	
4. Equipment preparation prior to coating application	
F. Wire Spray	120
1. Set-up and maintenance of equipment	
2. Surface build-up of forming related equipment	
G. Electric Welding	240
1. Set-up and operation of various electrical welding equipment	
2. Welding non-ferrous and ferrous alloys including: cast iron, hot and cold rolled steel, stainless steel, and aluminum	
3. Job preparation	
H. Miscellaneous	300
1. Grinding (weld preparation)	
2. Preheat	
3. Safety involved	
4. Operation of blase cleaning equipment	
TOTAL HOURS	6000

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RELATED INSTRUCTION:

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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.

	Hours
A. Safety in welding and cutting	12
B. Practical arithmetic	72
C. Elements of print reading	12
D. Reading shop prints	24
E. Formulas	12
F. Industrial accident prevention	24
G. Going metric	12
H. Measuring instruments	24
I. Metallurgy of iron	12
J. Metallurgy of steel	12
K. Metallurgy of non-ferrous metals	24
L. Metallography	12
M. Hardening and tempering	12
N. Heat treatment	24
O. Gas welding equipment	12
P. Gas welding techniques	36
Q. Gas cutting	24
R. Electricity	36
S. Arc welding equipment	36
T. Arc welding techniques	24
U. Arc welding of low carbon steel	24
V. Arc welding of alloy steels and iron	12
W. Arc welding of non-ferrous metals and overlapping	12
X. Gas shielded arc welding	36
Y. Fabrication of pipe by welding	24
Z. Inspection and testing of welds	12
AA. Bench work	24
BB. Drawings for welded parts (4 drawings/1 unit)	12
CC. D-C generators and motors	12
DD. A-C motors, generators and rectifiers	12
EE. Welded and riveted joints	12

TOTAL HOURS 648