



## APPENDIX A

### WELDER (INDUSTRIAL)

D.O.T. CODE 810.384-014

O\*NET CODE 51-4121.06

This training outline is the current standard for Work Processes and Related Instruction. Changes in technology, regulations, and safety/health issues may result in the need for additional on-the-job or classroom training.

### WORK PROCESSES

	<u>Approximate Hours</u>
A. <u>General Shop Techniques</u>	1,000
1.    Following all safety procedures and policies	
2.    Understanding oral or written work instructions	
3.    Simple welding with different processes	
4.    Simple burning by hand with oxy-acetylene	
5.    Assisting first class welders	
6.    Simple blueprint reading and fabrication	
7.    Simple welding to meet American Welding Society (AWS) codes and standards	
8.    Cosmetic grinding (if applicable)	
9.    Performing preventive maintenance and minor repair of equipment	
B. <u>Oxy-acetylene Welding and Cutting</u>	100
1.    Following all safety procedures and policies	
2.    Performing a variety of cutting on different thicknesses of carbon steels	
3.    Soldering	
4.    Brazing	
5.    Setting up templates and using burning table	
6.    Minor oxy-acetylene welding	

- C. G.T.A.W. (T.I.G.) 2,700
1. Following all safety procedures and policies
  2. Setting up fixtures for complicated welding assemblies
  3. Reading blueprints for advanced welding
  4. Using inert gas as a backing
  5. Setting up and using an automatic voltage-controlled welding head and automatic wire feed
  6. Welding of carbon steel and stainless steel
  7. Welding aluminum with A.C. current and argon shielding
  8. Welding aluminum with D.C. current and helium shielding
  9. Welding of dissimilar metals
  10. Demonstrating knowledge of filler metals and their applications
  11. Using G.T.A.W. process and conforming to AWS codes and standards
  12. Demonstrating basic knowledge of T.I.G. torches, parts, machines
- D. G.M.A.W. (M.I.G.) 1,200
1. Following all safety procedures and policies
  2. Setting up machines and wire
  3. Welding carbon steel and stainless steels
  4. Demonstrating knowledge of filler metals required for carbon steel and stainless steel
  5. Welding to AWS codes and standards
  6. Demonstrating basic knowledge of M.I.G. torches, parts, machinery
- E. S.A.W. (Sub-Arc) (optional\*) 1,000
1. Following all safety procedures and policies
  2. Setting up machines with filler wire and fluxes
  3. Welding all grades of carbon steel
  4. Demonstrating basic knowledge of S.A.W. of stainless steel
  5. Using proper filler metals
  6. Conforming to AWS codes and standards

F.	<u>Layout and Fixtures</u>	1,000
	1. Layout	
	2. Designing and building fixtures	
	3. Using mills, lathes, drill presses	
G.	<u>Inspection and Quality Control</u>	1,000
	1. Using precision measuring instruments, such as gauges, calipers, comparators	
	2. Working with thin gauge materials	
	3. Working to close tolerances (such as .015 inch)	
	4. Using staging techniques	
	TOTAL HOURS	<u>8,000</u>

\*If optional components are not selected, the hours should be devoted to further mastery of the required work processes.

*Apprenticeship work processes are applicable only to training curricula for apprentices in approved programs. Apprenticeship work processes have no impact on classification determinations under Article 8 or 9 of the Labor Law. For guidance regarding classification for purposes of Article 8 or 9 of the Labor Law, please refer to <http://www.labor.state.ny.us/workerprotection/publicwork/PDFs/Article8FAQS.pdf>.*

APPENDIX B

WELDER (INDUSTRIAL)

RELATED INSTRUCTION

Safety and Health

*Topics to be covered include, but are not limited to:*

Avoiding Overexposure to Fumes

Burn Protection

Electrical Safety

Fire and Explosion Prevention

First Aid – minimum 6.5 hours every 3 years

Good Housekeeping

Lockout/Tagout

Proper Lifting Techniques

Proper Use of Personal Protective Clothing and Equipment

Protecting Against Noise

Radiation Protection

Right-to-Know/Material Safety Data Sheets for All Materials Used on the Job

Safeguarding Vision

Scaffold/Platform Safety (if applicable)

Blueprints

Basic Blueprint Reading

Advanced Blueprint Reading

Weld Symbols

Reading Welding Charts

Reading Codes and Standards

Layout

Mathematics

Fundamentals

Trade Applications

Precision Measurement

Trade Theory and Science

Safe Use and Care of Hand and Power Tools

Safe Use and Care of Equipment and Machines

Terminology

Metals Used in the Trade and Their Properties

Fundamentals of Electricity

Oxy-acetylene Welding and Cutting  
G.T.A.W.  
G.M.A.W.  
S.A.W. (If Work Process “E” on Appendix A is selected)  
Fixtures and Fixture Design  
Heat Treatment  
Inspection and Quality Control  
Welding Non-Ferrous Materials  
American Welding Society Certification Course (optional)

Other Workplace Skills

Sexual Harassment Prevention Training – minimum 3 hours

Other Related Courses as Necessary

A minimum of 144 hours of Related Instruction is required for each apprentice for each year.