WELDER (INDUSTRIAL)

APPENDIX A

O*NET CODE 51-4121.06

This training outline is a minimum standard for Work Processes and Related Instruction. Changes in technology and regulations may result in the need for additional on-the-job or classroom training.

WORK PROCESSES

Approximate Hours

A. General Shop Techniques **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
8. Society (AWS) codes and standards.
9. Cosmetic grinding (if applicable).
10. Performing preventive maintenance and minor repair of equipment.

B. Oxy-acetylene Welding and Cutting **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. Layout and Fixtures 1,000

1. Layout.
2. Designing and building fixtures.
3. Using mills, lathes, drill presses.

G. Inspection and Quality Control **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.

Approximate Total Hours **8,000**

*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 https://dol.ny.gov/public-work-and-prevailing-wage

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APPENDIX B

RELATED INSTRUCTION

Safety and Health

1. Avoiding Overexposure to Fumes
2. Burn Protection
3. Electrical Safety
4. Fire and Explosion Prevention
5. Sexual Harassment Prevention Training – must comply with section 201-g of the Labor Law
6. First Aid – minimum 6.5 hours every 3 years
7. Good Housekeeping
8. Lockout/Tagout
9. Proper Lifting Techniques
10. Proper Use of Personal Protective Clothing and Equipment
11. Protecting Against Noise
12. Radiation Protection
13. Right-to-Know/Material Safety Data Sheets for All Materials Used on the Job
14. Safeguarding Vision
15. Scaffold/Platform Safety (if applicable)

Blueprints

1. Basic Blueprint Reading
2. Advanced Blueprint Reading
3. Weld Symbols
4. Reading Welding Charts
5. Reading Codes and Standards
6. Layout

Mathematics

1. Fundamentals
2. Trade Applications Precision Measurement
3. Trade Theory and Science
4. Safe Use and Care of Hand and Power Tools

5. Safe Use and Care of Equipment and Machines
6. Terminology
7. Metals Used in the Trade and Their Properties
8. Fundamentals of ElectricityOxy-acetylene Welding and Cutting
9. G.T.A.W.
10. G.M.A.W.
11. S.A.W. (If Work Process “E” on Appendix A is selected)
12. Fixtures and Fixture Design
13. Heat Treatment
14. Inspection and Quality Control
15. Welding Non-Ferrous Materials
16. American Welding Society Certification Course (optional)

Other Related Courses as Necessary

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

Appendix B topics are approved by New York State Education Department.