

**PRECISION TIG (GTAW) WELDER
(Time-Based)**

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. Safety and Workplace Orientation

80

1. Learn and follow employer-specific safety procedures around power supply, machines, equipment, tools, and manufacturing processes.
2. Recognize and minimize potential hazards.
3. Adhere to Occupational Safety and Health Administration (OSHA)
4. General Industry safety standards.
5. Use Personal Protective Equipment (PPE), especially welding-specific items such as: shaded lenses, welding helmets, and safety glasses.

B. Welding Preparation and Practice

920

1. Read and understand technical drawings.
2. Learn weld symbols.
3. Learn weld types.
4. Learn welding codes and standards, such as those of the American Welding Society (AWS).
5. Learn welding procedures (also known as Welding Procedure Specifications (WPS) or Welding Schedule).
6. Become familiar with all manner of Gas Tungsten Arc Welding (GTAW) equipment, including: torches, hoses, nozzles, flowmeters.
7. Learn terminology and applications of basic electrical theory as it applies to GTAW.
8. Learn properties and appropriate use of shielding gases, such as argon, helium, hydrogen, and nitrogen.

9. Practice welding on a variety of joint types (Butt, Lap, Tee, etc.) and weld positions (Flat, Horizontal, Vertical).

C. Welding Production and Certification*

1000

*Welding certification is NOT a credential conferred by the New York State Department of Labor. Certification means a welder has demonstrated the ability to make good welds.

1. Read and follow directions per work order(s).
2. Set up work station and perform production runs; utilize work fixtures; rig work fixtures (if applicable).
3. Perform all manner of welds, such as: solid and stranded wire welds for electrical connections (if applicable), fusion welds, tack welds, with or without use of filler metals.
4. Use knowledge of metal joining to assess weld quality; recognize potential weld quality issues.
5. Use mechanized, automatic, or automated GTAW processes (if applicable).
6. Demonstrate ability to weld on a variety of metals, especially exotic alloys (e.g., Inconel).
7. Demonstrate ability to perform single-pass welds on weldments of 016-.090" thick.
8. Attain certifications for welds using a variety of materials, thicknesses, filler metals, shielding gases, positions, joint design, and welding current.
9. Perform welds in a purged environment (if applicable).
10. Complete all manner of paperwork regarding completed work; document compliance with Work Schedule(s).

Approximate Total Hours

2000

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, Health, and the Workplace

1. General Workplace Safety, including:
 - a. Preventing Overexposure to Fumes
 - b. Electrical Safety
 - c. Burn Protection
 - d. Fire Safety
2. First Aid & CPR (minimum 6.5 hours)
3. Lockout/Tagout (LO/TO)
4. Proper Use of Personal Protective Equipment (PPE)
5. Right-to-Know/Safety Data Sheets (SDS)
6. Proper Lifting Techniques
7. Sexual Harassment Prevention Training -MUST comply with Section 201-g of the Labor Law

Trade Theory, Science, and Skills

1. Basic and Advance Blueprint Reading
2. Weld Symbols
3. Welding Schedules and Charts
4. Codes and Standards
5. Layout
6. Fundamental Mathematics
7. Trade Math
8. Precision Measurement
9. Safe Use and Care of Hand and Power Tools
10. Safe Use and Care of Equipment and Machines
11. Metallurgy
12. Chemistry and Physics Fundamentals
13. Work Fixtures and Design
14. Heat Treatment
15. Inspection and Quality Control
16. Welding Non-Ferrous Metals

17. Career Development: AWS, and other welder certifications

Other Related Courses as Necessary

A Minimum of 144 hours of Related Instruction is Required for Each Apprentice.

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