

WELDING I & II

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COURSE OBJECTIVE

Students will learn and practice welding skills and techniques used in the industry in accordance with American Welding Society (AWS) standards.

COURSE DESCRIPTION

This course prepares students for a career in Welding. The course has a high concentration of many welding applications. Shielded Metal Arc Welding (SMAW), Gas Metal Arc Welding (GMAW), Gas Tungsten Arc Welding (GTAW), Flux Cored Arc Welding (FCAW), Plasma Arc Cutting (PAC), Oxy-Acetylene Cutting (OAC), Oxy-Acetylene Welding (OAW) and Brazing (B) are taught throughout the program. Students are also taught welding safety, how to use different measuring devices, electrical principals, grinding, the use of various hand tools, layout as it applies to fabrication, making a bill of materials and cost estimation, metallurgy, blueprint reading and welding symbols. Students will be given the opportunity to earn AWS and ASME welding certifications. All welding certification will be done by a Certified Welding Inspector (CWI).

COURSE TOPICS

Shielded Metal ARC Welding (SMAW) | Gas Metal ARC Welding (GMAW) | Gas Tungsten ARC Welding
Flux Cored Arc Welding (FCAW) | OSHA | Oxy-Acetylene Welding (OAW) | Brazing (B)
Manual and Semiautomatic Plasma Arc Cutting (PAC) | Oxy-Acetylene Cutting (OAC)

REQUIRED SUPPLIES

Chipping Hammer | Cutting Glasses with #5 Shade Lens | Grinding Faceshield
Leather Work Boots (Steel Toed Required) | Mig Pliers Safety Glasses | Respirator/Facemask (Opt.)
Shop Shirt (Navy Tee) | Slip-Notch Pliers | Tape Measure | Vise Grips | Welder's Cap
Welding Gloves/Helmet/Jacket | Welding Sleeves | Wire Brush | Workwear Pants (Navy)

NOTE: Each student is to have their own equipment. Equipment may need to be replaced as the school year progresses.

TEXTBOOKS

Welding Skills; B. J. Moniz

COOPERATING COMPANIES

AccuTrex
Alex Paris
Consol Energy
Caterpillar

Dynamet, Inc.–Washington,
PALincoln Electric
Maxwell Welding & Machine
Range Resources

Sky Oxygen
SMS Millcraft
Steam Fitters Union
Local 449

SPECIALIZED SHOP EQUIPMENT

CNC Plasma Table | Inverter Technology GMAW | Inverter Technology SMAW | Ironworking
Shear/Press/Punch | Square Wave GTAW

CERTIFICATIONS

American Welding Society-AWS D1.1–(Structural Code)
American Welding Society-AWS D1.5–(PA Department of Transportation Code)
ASME Information–(Pressure Vessel Code), (ASME Boiler & Vessel Code)
CareerSafe OSHA

ARTICULATION AGREEMENTS

Community College of Allegheny County
Penn Commercial, Inc.

POST-SECONDARY TRAINING OPTIONS

Community College of Allegheny County
Hobart Institute of Welding Technology
Lincoln Electric
Penn Commercial, Inc.–Welding
Pennsylvania College of Technology

POTENTIAL CAREERS

Boilermaker | CNC Plasma Operator | Ironworker | Maintenance Welder | Metal Fabricator
Metallurgist | Pipe Welder | Ship Builder | Steamfitter | Underwater Welder
Welding Engineer | Welding Inspector | Welding Instructor | Welding Sales | Welding Technician

WELDER SKILLS

Equipment Selection — Determining the kind of tools and equipment needed to do a job.

Quality Control Analysis — Conducting tests and inspections of products, services, or processes to evaluate quality or performance.

Equipment Maintenance — Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.

Installation — Installing equipment, machines, wiring, or programs to meet specifications.

Mathematics — Using mathematics to solve problems.

Operation and Control — Controlling operations of equipment or systems.

Repairing — Repairing machines or systems using the needed tools.

Reading Comprehension — Understanding written sentences and paragraphs in work related documents.

WAGES AND EMPLOYMENT TRENDS FOR WELDERS, CUTTERS, SOLDERERS & BRAZERS

Median Wages (2020)	\$21.25 Hourly, \$44,190 Annually
Number of Jobs (2019)	438,900 Employees
Job Outlook (2019-2029)	3% (As Fast as Average)
Employment Change (2019-2029)	13,600

Source: *Occupational Outlook Handbook*