



VETERANS WELDING CLASS

Technical Training Center
25500 Outer Drive
Lincoln Park, Michigan 48146

Welding Training Program

The Technical Training Center instructors will conduct a course for non-Ford personnel to learn how to set up, maintain and use various welding processes to permanently join metal parts. Additionally, students will learn to use an oxy-acetylene torch and plasma cutting tungsten rod for cutting metal.

The methods learned will be:

- Shielded Metal Arc Welding (SMAW or stick)
- Gas Metal Arc Welding (GMAW or MIG)
- Gas Tungsten Arc Welding (GTAW or TIG)
- Oxy-acetylene welding, cutting and brazing (stick)
- Plasma cutting
- Brazing and soldering

Types of joints include:

- Lap
- Butt
- Corner
- Edge
- Tee

Participants will practice the following weld positions:

- 1G – Flat
- 2G – Horizontal
- 3G – Vertical
- 4G – Overhead
- 5G – Horizontal fixed pipe
- 6G – 45° fixed pipe

Assumptions:

Duration: 6 weeks

Number of participants: 6-8

Objectives:

After completing this training, graduates will be able to:

- Describe and value safe workplace practices
- Identify and use task related electrodes
- Identify various types of ferrous and non-ferrous metals
- Set up and operate various welding machines and torches
- Perform welds on plate and pipe
- Use industry standard tools to cut and separate metal
- Set up and use oxy-fuel processes to cut and weld
- Read and interpret blueprints, welding symbols and sectionings in order to calculate the dimensions to be welded
- Inspect structures and materials
- Use a propane torch to solder two pieces of alloy metal together

Course Outline

Week 1:

Overview of safety in all processes Oxy-acetylene fuel

- Process overview
- Set up and cutting
- Welding

Week 2:

Welding symbols and blueprint reading

SMAW

- Safety
- Machine set up and maintenance
- Process and electrode identification
- Practical application

Week 3:

GMAW

- Safety
- Machine set up and maintenance
- Practical application

Week 4:

GTAW

- Safety
- Fumes and gasses, ventilation, ozone and eye protection
- Ultraviolet and infrared radiation and Sil-braze considerations
- Practical application
 - o Mild steel
 - o Aluminum
 - o Stainless steel

Week 5:

Brazing 6G pipe certification training

- Root pass
- Hot pass
- Cover pass

Plasma cutting with tungsten rod

Week 6:

Practical application of all processes

Test

Note: Curriculum was designed based on:

- American Welding Society guideline
- U.S. Department of Labor “Occupational Outlook Handbook”: Welders, Cutters Solderers and Brazers See: [bls.gov/ooh/production/welders-cutters-solderers-and-brazers.htm](https://www.bls.gov/ooh/production/welders-cutters-solderers-and-brazers.htm)
- Recommendations from TTC welding instructors