

Welding

(Qualified welding instructor required.)

1. Successfully complete a minimum of three hours of classroom instruction.*
2. Identify the following:
 - a. Welding hood
 - b. GMAW welding wire
 - c. SMAW power supply
 - d. Welding gas regulator
 - e. GMAW welding torch
 - f. 220-volt electrical outlet
 - g. PAC torch
3. Explain the following terms:
 - a. Fusion welding
 - b. Electrode
 - c. Oxidation
 - d. Slag
 - e. Alloy
4. Select and describe one fusion welding process.
 - a. How is heat generated?
 - b. Why is filler metal added?
 - c. Describe how the molten metal is protected from oxidation.
5. Name at least one thermal and one mechanical cutting process.
 - a. Describe how each one works.
 - b. Discuss relative advantages and limitations of each.
6. Demonstrate a knowledge of risks and hazards associated with welding and cutting and the steps to prevent or reduce them.
 - a. Electric current
 - b. High temperatures
 - c. Ultraviolet radiation
 - d. Toxic fumes
 - e. Moving machinery/blades
 - f. High-pressure gases
7. Describe the safety gear required for various fusion welding and cutting processes.
 - a. Head/eye protection
 - b. Clothing
 - c. Gloves
 - d. Hearing
 - e. Filtration/ventilation
8. For either the GMAW or SMAW welding process, demonstrate an ability to use welding guidelines, such as handbook tables, to select the appropriate welding process parameter settings, including proper amperage and electrode type/size for various types and thicknesses of a selected metal.
9. Explain and demonstrate proper equipment setup and consumables selection for at least one welding process.



10. Describe all the components of the equipment to be used and their function.

11. Using the designated processes, perform the following:

PAC

- a. Make one straight cut at least three inches long in mild steel or aluminum

SMAW

- a. Make two bead-on-plate welds at least two inches in total length
 - b. Make one square-groove weld in the flat position
- or**
- c. Make one corner weld in the flat position

GMAW

- a. Make two bead-on-plate welds at least two inches in total length
 - b. Make one square-groove weld in the flat position
- or**
- c. Make one lap weld in the flat position

* Must pass a knowledge exam upon completion.

^ These are minimum requirements; additional welding is encouraged.

Skill Level 3

Original Honor 1978