# DANVILLE AREA COMMUNITY COLLEGE

**COURSE NUMBER: COURSE TITLE: DIVISION:**

**IAI CODE{S):**

WELD180

Arc Welding Technology

# SEMESTER CREDIT HOURS: 4

**PREREQUISITES:** None

**FACULTY:** Bob Skinner 217-443-8791 bski n[ner@dacc.ed](mailto:ner@dacc.ed) u

# COURSE DESCRIPTION:

Electric arc welding processes are discussed. Flat, horizontal, vertical and overhead positions will be stressed. Alloying elements and their uses in various steel will be covered. Welding of aluminum and castings will also be covered.

# COURSE OBJECTIVES / GOALS:

1. Students will become aware of the safety practices related to arc welding equipment and processes. Student MUST pass the safety test in order to continue the course.

1. To learn the basic differences of commonly used electrodes such as their physical and mechanical properties.
2. To learn how to select the correct electrode for the job at hand.
3. AC and DC machines, how they are best used.
4. Students will learn the properties related to energy such as melting point, weldability, fusibility, volatility, electrical and thermal conductivity, electrical resistance, coefficient of thermal expansion, hot shortness, and overheating.
5. Students will study the most commonly used types of steel and effects of the most commonly used elements in making steel.
6. Students will learn the symbols in order to read welding blueprints.
7. To explain the American Iron and Steel Institute (AISI) and the Society of Automotive Engineers (SAE) numbering system for the various grades of steel.
8. Manipulative skills and techniques will be developed in this course as a result of time to practice.

# OUTLINE:

* Safety Inspections of equipment and accessories.
* Equipment operation and adjustments.
* Set-up for shielded metal arc welding operations on plain carbon steel.
* Operate shielded metal arc welding equipment.
* Make fillet welds, all positions, on plain carbon steel, using the shielded metal arc welding process.
* Make groove welds, all positions, on plain carbon steel, using the shielded metal arc welding process.
* Perform 2G-3G-4G limited thickness qualification tests on plain carbon steel plate, using the shielded metal arc welding process.
* Perform 1G-2G-6G limited thickness qualification tests on plain carbon steel pipe.

# WEEKLY ACTIVITIES:

* Wednesday and Thursday are set up for lectures and reviews of test materials and welding in lab.
* Monday and Tuesday we test on the reviews of week before and welding in lab.

# TEXTBOOK / SPECIAL MATERIALS:

Welding Principles & Applications. 7th ed. By Larry Jeffus (Del mar Publishing) Protective clothing, gloves, safety glasses

# EVALUATION:

Attendance Shop Projects

Written and Oral Examinations

Optional:

Before the end of the semester, students wishing to take a Welder Qualification Test, may do so. This test will be tested by visual and bend tests.

All weldaments shall be prepared and welded in accordance with the requirements of Sect. 4 of ANSI/ AWSD 1.1.

Weld Process, Position of test, Limited or Unlimited Thickness of Plate This test is optional. Pipe coupons may also be tested.

Additional Fee is required for testing.

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