

WELD 70A Course Outline as of Fall 1981**CATALOG INFORMATION**

Dept and Nbr: WELD 70A Title: BEGINNING WELDING
 Full Title: Beginning Welding- Introduction to Basic Fundamentals
 Last Reviewed: 11/13/2023

| Units | | Course Hours per Week | | Nbr of Weeks | Course Hours Total | |
|---------|------|-----------------------|------|--------------|--------------------|-------|
| Maximum | 2.00 | Lecture Scheduled | 1.00 | 17.5 | Lecture Scheduled | 17.50 |
| Minimum | 2.00 | Lab Scheduled | 3.00 | 8 | Lab Scheduled | 52.50 |
| | | Contact DHR | 0 | | Contact DHR | 0 |
| | | Contact Total | 4.00 | | Contact Total | 70.00 |
| | | Non-contact DHR | 0 | | Non-contact DHR | 0 |

Total Out of Class Hours: 35.00

Total Student Learning Hours: 105.00

Title 5 Category: AA Degree Applicable

Grading: Grade Only

Repeatability: 05 - May Be Taken for a Total of 4 Units

Also Listed As:

Formerly:

Catalog Description:

Fundamentals of arc and oxy-acetylene welding and cutting.

Prerequisites/Corequisites:**Recommended Preparation:****Limits on Enrollment:****Schedule of Classes Information:**

Description: Intro to basic fundamentals of electric arc & gas welding. (Grade Only)

Prerequisites/Corequisites:

Recommended:

Limits on Enrollment:

Transfer Credit: CSU;

Repeatability: May Be Taken for a Total of 4 Units

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree: Area
CSU GE: Transfer Area

Effective: Inactive:
Effective: Inactive:

IGETC: Transfer Area

Effective: Inactive:

CSU Transfer: Transferable Effective: Fall 1981 Inactive: Fall 2019

UC Transfer: Effective: Inactive:

CID:

Certificate/Major Applicable:

Certificate Applicable Course

COURSE CONTENT

Outcomes and Objectives:

The student will:

1. Describe and demonstrate principles of welding safety.
2. Identify components of oxy-acetylene welding and cutting equipment.
3. Recognize a transformer, rectifier and motor generator type welding machine.
4. Explain the principles of the AC and DC welding current.
5. Identify components of gas metal arc welding equipment.
6. Set up and place in operation oxy-acetylene, arc and gas metal arc welding equipment.
7. Differentiate between plain carbon steel, alloy steel, ferrous and non-ferrous metals.
8. Produce a sample butt joint, lap joint, fillet weld and braze welded fillet using the oxy-acetylene welding process.
9. Produce a sample of free hand flame cutting and straight line beveling and piercing.
10. Produce a sample of stringer beads, padding, weaving in the flat position, a multipass fillet weld in the horizontal position, a lap joint and a fillet weld in the vertical down position using shielded metal arc welding.
11. Produce a sample lap joint, fillet weld using the gas metal arc process.
12. Identify filler metals for oxy-acetylene and arc welding.
13. Recognize a light medium and heavy flux coated arc welding electrode.
14. Achieve a passing score (75%) on written examinations.
15. Achieve a passing score (75%) on manipulative skill development demonstrations.

Topics and Scope:

- I. Shielded Metal Arc
 - A. Arc welding safety
 - B. Electrical terms

- C. Welding machines
- D. Personal equipment
- E. Shop equipment
- F. Basic welding terms
- II. Oxy-Acetylene
 - A. Oxy-acetylene safety
 - B. Oxy-acetylene chemistry
 - C. Compressed gas cylinders
 - D. Pressure regulators
 - E. Hose, torches and tips
- III. Metallurgy
 - A. Steel production
 - B. Ferrous and non-ferrous metals
 - C. Alloy steels
 - D. Effects of heat during welding
 - E. Heat treating
 - F. Case hardening
 - G. Metals identification
- IV. Striking and Arc
 - A. Electrode selection
 - B. Adjusting equipment
 - C. Running short beads
 - D. Running continuous beads
 - E. Weaving the electrode
 - F. Fillet welds
 - G. Vertical down beads
 - H. Joint design
 - I. Manipulative practice
- V. Carrying Puddles
 - A. Tip selection and flame settings
 - B. Torch position and motion
 - C. Selecting a filler rod
 - D. Laying beads with a filler rod
 - E. Joint design
 - F. Manipulative practice
- VI. Flame Cutting
 - A. Cutting safety
 - B. Cutting torches
 - C. Gas pressure settings
 - D. Flame settings
 - E. Torch manipulation
 - F. Manipulative practice
- VII. Brazing
 - A. Joint preparation
 - B. Filler rod selection
 - C. Flame settings
 - D. Fluxes
 - E. Temperature control
 - F. Manipulative practice
- VIII. Gas Metal Arc Welding (MIG)
 - A. Mig safety
 - B. Power sources

- C. Shielding gases
- D. Wire feeders
- E. Guns and barrles
- F. Consumable wire
- G. Manipulative practice

Assignment:

Include weekly reading assignments, regular quizzes based on reading (including handouts developed by instructor and from manufacturers), practical skills assignments and tests. Course information will be supplemented by films and videos.

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None

Writing
0 - 0%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Homework problems, Quizzes, Exams

Problem solving
0 - 10%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Class performances, Performance exams

Skill Demonstrations
0 - 60%

Exams: All forms of formal testing, other than skill performance exams.

Multiple choice, True/false

Exams
0 - 10%

Other: Includes any assessment tools that do not logically fit into the above categories.

ATTENDANCE

Other Category
0 - 10%

Representative Textbooks and Materials:

WELDING SKILLS, Giachino-Weeks