WELD 70 Course Outline as of Summer 2017

CATALOG INFORMATION

Dept and Nbr: WELD 70 Title: BEGINNING WELDING
Full Title: Beginning Welding: 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:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	WELD 70A

Catalog Description:
This course provides a general overview of the fundamentals of arc and oxy-acetylene welding and cutting. This course includes hands-on practice.

Prerequisites/Corequisites:

Recommended Preparation:
Eligibility for ENGL 100 or ESL 100

Limits on Enrollment:

Schedule of Classes Information:
Description: Fundamentals of arc and oxy-acetylene welding and cutting. (Grade Only)
Prerequisites/Corequisites:
Recommended: Eligibility for ENGL 100 or ESL 100
Limits on Enrollment:
Transfer Credit: CSU;
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**			Effective:	Inactive:
CSU GE:	**Transfer Area**			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:
Upon completion of this course, students will be able to:
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 electrical terms, including AC and DC welding current.
5. Identify components of shielded metal arc welding equipment.
6. Set up and place in operation oxy-acetylene and shielded metal arc welding equipment.
7. Differentiate between plain carbon steel, alloy steel and 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 filet weld in the horizontal position, a lap joint and a fillet weld in the vertical down position using shielded metal arc welding..
11. Identify filler metals for oxy-acetylene and arc welding.
12. Recognize a light medium and heavy flux coated arc welding electrode.

Topics and Scope:

I. Shielded Metal Arc Equipment
   - A. Arc welding safety
   - B. Electrical terms
   - C. Welding machines
   - D. Personal equipment
   - E. Shop equipment
   - F. Basic welding terms

II. Oxy-Acetylene Equipment
   - 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 metals
- C. Alloy steels
- D. Effects of heat during welding
- E. Metals identification

IV. Striking an Arc
- A. Arc welding 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. Oxy-acetylene Welding
- 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. Butt joint, lap joint and fillet welds
- G. 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

Assignment:

1. Weekly reading assignments, 10 - 15 pages.
2. Regular quizzes (5 to 10) based on reading (including handouts developed by instructor and from manufacturers).
3. Homework problems, including safety handouts.
4. Practical skills assignments and welding samples.
5. Midterm; final exam.

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, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments and skill demonstrations are more appropriate for this course.	Writing 0 - 0%

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

Homework problems	Problem solving 5 - 10%

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

Skills assignments and welding samples	Skill Demonstrations 40 - 60%

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

Quizzes, Mid-term and Final exam	Exams 20 - 40%

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

Participation	Other Category 0 - 10%

Representative Textbooks and Materials:
Instructor prepared materials.