

WELD 120 Course Outline as of Fall 2010

CATALOG INFORMATION

Dept and Nbr: WELD 120      Title: CUTTING METALS  
Full Title: Cutting Ferrous and Non-ferrous Metals  
Last Reviewed: 11/20/2006

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	0.50	Lecture Scheduled	0.50	8	Lecture Scheduled	4.00
Minimum	0.50	Lab Scheduled	1.50	8	Lab Scheduled	12.00
		Contact DHR	0		Contact DHR	0
		Contact Total	2.00		Contact Total	16.00
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 8.00

Total Student Learning Hours: 24.00

Title 5 Category: AA Degree Applicable  
Grading: Grade or P/NP  
Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP  
Also Listed As:  
Formerly:

**Catalog Description:**  
Hands-on experience with plasma cutting, oxy-acetylene cutting, and air-arc gouging of ferrous and non-ferrous metals. Intended for industrial applications.

**Prerequisites/Corequisites:**

**Recommended Preparation:**

**Limits on Enrollment:**

**Schedule of Classes Information:**  
Description: Hands-on experience with plasma cutting, oxy-acetylene cutting, and air-arc gouging of ferrous and non-ferrous metals. Intended for industrial applications. (Grade or P/NP)  
Prerequisites/Corequisites:  
Recommended:  
Limits on Enrollment:  
Transfer Credit:  
Repeatability: Two Repeats if Grade was D, F, NC, or NP

## **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

<b>AS Degree:</b>	<b>Area</b>	<b>Effective:</b>	<b>Inactive:</b>
<b>CSU GE:</b>	<b>Transfer Area</b>	<b>Effective:</b>	<b>Inactive:</b>
<b>IGETC:</b>	<b>Transfer Area</b>	<b>Effective:</b>	<b>Inactive:</b>
<b>CSU Transfer:</b>		<b>Effective:</b>	<b>Inactive:</b>
<b>UC Transfer:</b>		<b>Effective:</b>	<b>Inactive:</b>

**CID:**

**Certificate/Major Applicable:**

Certificate Applicable Course

## **COURSE CONTENT**

### **Outcomes and Objectives:**

Upon completion of this course, the student will be able to:

1. Demonstrate proper welding safety.
2. Set up and shut down various welding equipment.
3. Differentiate between ferrous and non-ferrous metals.
4. Describe applications for plasma cutting, oxy-acetylene cutting, and air-arc gouging.
5. Use plasma cutting, oxy-acetylene cutting, and air-arc gouging to make cuts to ferrous and non-ferrous metals.

### **Topics and Scope:**

- I. Introduction
  - A. Overview and comparison of processes
    1. Plasma cutting
    2. Oxy-acetylene cutting
    3. Air-arc gouging
  - B. Tools and equipment
  - C. Safety
  - D. Speed and quality
  - E. Most common industrial applications
  - F. Materials appropriate to each process
- II. Oxy-acetylene Cutting
  - A. Lecture
    1. Safety
    2. Gases
    3. Tanks
    4. Torches
    5. Accessories
    6. Applications
    7. Ferrous and non-ferrous metals
  - B. Lab

1. Setting up and shutting down equipment
2. Cutting
  - a. Straight line cuts
  - b. Circles
  - c. Bevels
  - d. Changing cutting direction
  - e. Free-form cutting
  - f. Stack cutting

### III. Plasma Cutting

#### A. Lecture

1. Safety
2. Gases
3. Tanks
4. Torches
5. Accessories
6. Applications
7. Ferrous and non-ferrous metals
8. Stack cutting production methods

#### B. Lab

1. Setting up and shutting down equipment
2. Cutting
  - a. Straight line cuts
  - b. Circles
  - c. Bevels
  - d. Changing cutting direction
  - e. Free-form cutting
  - f. Stack cutting

### IV. Air-arc Gouging

#### A. Lecture

1. Safety
2. Gases
3. Tanks
4. Torches
5. Accessories
6. Applications
  - a. New fabrications
  - b. Salvage and repair
7. Ferrous and non-ferrous metals

#### B. Lab

1. Setting up and shutting down equipment
2. Groove cutting
3. Weld removal
4. Full penetration
5. Joint preparation
6. Back gouging

### V. Economics of Processes

#### A. Cost of set-ups

#### B. Production speed

#### C. Purchasing equipment

### **Assignment:**

Representative assignments:

1. Notebook of class notes and handouts.
2. Equipment set-up and shut down.
3. Cutting projects--samples of each process (4-6 total).
4. Final project: manipulate a cutting course to result in a given shape.

### 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 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.

None

Problem solving  
0 - 0%

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

Equipment set up and shut down; cutting projects

Skill Demonstrations  
80 - 90%

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

None

Exams  
0 - 0%

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

Notebook

Other Category  
10 - 20%

### Representative Textbooks and Materials:

Instructor prepared materials.