

# SOUTHEAST COMMUNITY COLLEGE | COURSE SYLLABUS

## CONTINUING EDUCATION DIVISION

Revision Date: January 5, 2023

[Syllabus Statements](#)

### I. CATALOG DESCRIPTION

**Course Number:** WELD-1010

**Course Title** Gas Metal Arc Welding (Aluminum)

**Prerequisite(s):** WELD 1000 or appropriate AWS D1.1 qualification.

**Catalog Description:** This class is intermediate to advanced instruction in Gas Metal Arc Welding theory, safety, applications, manipulative skills, welding principles, and procedures. Filler wire, shielding gases, welding power sources, welding of aluminum, and welding processes on different joint configurations are included.

**Credit Hours:** 1.5

**Class Hours:** 12

**Lab Hours:** 32

**Total Contact Hours:** 44

### II. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES:

#### A. STUDENT LEARNING OUTCOMES: *Student will be able to:*

1. Provide the opportunity for learners to increase their knowledge and develop their skills in Gas Metal Arc Welding on aluminum.
2. Understand the theory of the GMAW aluminum process
3. Understand the safe operation of the GMAW aluminum equipment
4. Demonstrate the proper setup and operation of the equipment involved in GMAW on aluminum.
5. Arc weld aluminum in the flat and horizontal positions on various types of joints with different modes of transfer
6. Identify welding blueprint symbols

#### B. GENERAL EDUCATION LEARNING OUTCOMES

1. Increase the students' ability to reason and solve quantitative problems in a variety of contexts utilizing mathematical manipulations such as words, data sets, graphs, tables, etc. (GELO 6)

### III. CONTENT/TOPICAL OUTLINE (course outline may provide more detailed information)

#### Class 1:

**Objectives:** Class Registration  
Tour of Facilities  
Policies  
Course Overview

Hand out Text Books; Miller GMAW, AWS A2.4, Standard Symbols For Welding, Brazing and Nondestructive Examination, Aluminum Association Handouts.

## Safety Film GMAW

**Reading Assignment** Introduction to Aluminum Welding

**Class Discussion** Lecture and Class Discussion  
Demonstration; Safety Exercises

**Assignment** Exercise 1- Blueprint

---

### Class 2:

**Objectives:** Review of Previous Session  
Present information from Assigned Reading  
Practical Application

**Reading Assignment** Reference reading for Gas Metal Arc Welding Aluminum

**Class Discussion** Lecture and Class Discussion

**Assignment** Lab  
Exercise 2- Blueprint

---

### Class 3:

**Objectives:** Review of Previous Session  
Present information from Assigned Reading  
Practical Application

**Reading Assignment** Gas Metal Arc Welding- Welding Aluminum

**Class Discussion** Lecture and Class Discussion

**Assignment** Lab  
Exercise 4- Blueprint  
Quiz 1- Aluminum Welding

---

### Class 4:

**Objectives:** Review of Previous Session

Present information from Assigned Reading  
Practical Application

**Reading Assignment**      AWS A2.4 Chapters 1-6

**Class Discussion**      Lecture and Discussion

**Assignment**      Lab  
Exercise 4- Blueprint

---

**Class 5:**

**Objectives:**      Review of Previous Session  
Present Information from Assigned Reading  
Practical Application

**Reading Assignment**      AWS A2.4 Chapter 7

**Class Discussion**      Lecture and Discussion

**Assignment**      Lab  
Exercise 5- Blueprint

---

**Class 6:**

**Objectives:**      Review of Previous Session  
Present Information from Assigned Reading  
Practical Application

**Reading Assignment**      AWS A2.4 Chapters 8, 9, 10

**Class Discussion**      Lecture and Discussion

**Assignment**      Lab  
Exercise – Blueprint  
Quiz- Aluminum Welding

---

**Class 7:**

**Objectives:**      Review of Previous Session  
Present Information from Assigned Reading

## Practical Application

**Reading Assignment**      AWS A2.4 Chapters 11-12

**Class Discussion**      Lecture and Discussion

**Assignment**      Lab  
Exercise 7- Blueprint

---

### **Class 8:**

**Objectives:**      Review of Previous Session  
Present Information from Assigned Reading  
Practical Application

**Reading Assignment**      AWS A2.4 Chapters 13-14

**Class Discussion**      Lecture and Discussion

**Assignment**      Lab  
Exercise 8-Blueprint

---

### **Class 9:**

**Objectives:**      Review of Previous Session  
Present Information from Assigned Reading  
Practical Application

**Reading Assignment**      AWS A2.4 Chapters 15-16

**Class Discussion**      Lecture and Discussion

**Assignment**      Exercise 9- Blueprint  
Test- GMAW Welding

---

### **Class 10:**

**Objectives:**      Review of Previous Session

Present Information from Assigned Reading  
Practical Application

**Reading Assignment**      AWS A2.4 Chapter 17  
Annex's A, B, C, D, E, F, G

**Class Discussion**      Lecture and Discussion

**Assignment**      Lab

---

**Class 11:**

**Objectives:**      Review of Previous Session  
Present Information from Assigned Reading  
Practical Application

**Reading Assignment**

**Class Discussion**      Lecture and Discussion

**Assignment**      Lab  
Blueprint Test

---

**Class 12:**

**Objectives:**      Review of Previous Session  
Practical Application

**Reading Assignment**

**Class Discussion**      Lecture and Discussion

**Assignment**      Lab

**IV. INSTRUCTIONAL MATERIALS**

**A. Required Text(s):** Miller GMAW, Miller Electric Mfg. CO. Training Department. 2018  
AWS A2.4. Prepared by AWS A2 Committee on Definitions and Symbols. 2020

**B. Other Resources: Handouts**

American Aluminum Association. Welding Aluminum: Theory and Practice. Chapters 1, and 7. 4<sup>th</sup> Edition. 2002

**Printreading for Welders. Chapters 1, 2, 4, 8, 9. American Technical Publisher, Inc. 4<sup>th</sup> Edition.**

## **VI. METHODS OF PRESENTATION/INSTRUCTION**

A. Methods of presentation typically include a combination of the following:

1. Lecture, Board work, Demos, Lab.

## **VII. METHODS OF EVALUATION**

A. Methods of evaluation typically include a combination of the following:

1. Question & Answer Sessions, Quizzes, Tests. AWS Visual Inspection criteria on welds and weldments.

### **SCC STANDARD GRADING SCALE POLICY:**

|                  |                   |
|------------------|-------------------|
| <b>A+ 95-100</b> | <b>C+ 75-79</b>   |
| <b>A 90-94</b>   | <b>C 70-74</b>    |
| <b>B+ 85-89</b>  | <b>D+ 65-69</b>   |
| <b>B 80-84</b>   | <b>D 60-64</b>    |
|                  | <b>F Below 60</b> |

## **VIII. SPECIFIC COURSE REQUIREMENTS:**