

**STATE UNIVERSITY OF NEW YORK  
COLLEGE OF TECHNOLOGY  
CANTON, NEW YORK**



**MASTER SYLLABUS  
WELD 110 – GMAW AND FCAW (MIG)**

**Created by:** Cullen Haskins – 10/22/2020

**Updated by:**

**CANINO SCHOOL OF ENGINEERING TECHNOLOGY  
MECHANICAL ENGINEERING TECHNOLOGY  
FALL 2020**

A. **TITLE:** GMAW and FCAW (MIG)

B. **COURSE NUMBER:** WELD 110

C. **CREDIT HOURS (Hours of Lecture, Laboratory, Recitation, Tutorial, Activity):**

**# Credit Hours: 4**

**# Lecture Hours per Week: 2**

**# Lab Hours per Week: 4**

**Other per Week: 0**

**Course Length (# of Weeks): 15**

D. **WRITING INTENSIVE COURSE:** No

E. **GER CATEGORY:** N/A

F. **SEMESTER(S) OFFERED:** Spring

G. **COURSE DESCRIPTION:**

In this course, students learn the basic technology/equipment as well as the practical skills required for Gas Metal Arc Welding and Flux Core Arc Welding processes. Welding non-ferrous metals with spool gun attachments are also covered.

H. **PRE-REQUISITES/CO-REQUISITES:**

a. Pre-requisite(s): WELD 101 or WELD 102

b. Co-requisite(s): None

c. Pre- or co-requisite(s): None

**I. STUDENT LEARNING OUTCOMES:**

<u>Course Student Learning Outcome [SLO]</u>	<u>PSLO</u>	<u>GER</u>	<u>ISLO</u>
a. Demonstrate a conceptual understanding of GMAW, FCAW, and spool welding concepts and equipment.	2		2PS
b. Demonstrate the practical ability to use GMAW, FCAW, and spool welding equipment to produce quality welds.	4		5

<b>KEY</b>	<b><u>Institutional Student Learning Outcomes</u></b> <b><u>[ISLO 1 – 5]</u></b>
<b>ISLO #</b>	<b>ISLO &amp; Subsets</b>
<b>1</b>	<b>Communication Skills</b> Oral [O], Written [W]
<b>2</b>	<b>Critical Thinking</b> <i>Critical Analysis [CA], Inquiry &amp; Analysis [IA], Problem Solving [PS]</i>
<b>3</b>	<b>Foundational Skills</b> <i>Information Management [IM], Quantitative Lit./Reasoning [QTR]</i>
<b>4</b>	<b>Social Responsibility</b> <i>Ethical Reasoning [ER], Global Learning [GL],</i>

	<i>Intercultural Knowledge [IK], Teamwork [T]</i>
<b>5</b>	<b>Industry, Professional, Discipline Specific Knowledge and Skills</b>

J. **APPLIED LEARNING COMPONENT:**      Yes   X        No       

If Yes, select one or more of the following categories:

Classroom/Lab   X  

Civic Engagement       

Internship       

Creative Works/Senior Project       

Clinical Practicum       

Research       

Practicum       

Entrepreneurship       

Service Learning       

(program, class, project)

Community Service

**K. TEXTS:**

“GMAW/FCAW Handbook” 1<sup>st</sup> edition, ISBN-13: 978-1631263651

<https://www.g-wonlinetextbooks.com/gmaw-fcaw-handbook-2018/>

**L. REFERENCES: N/A**

**M. EQUIPMENT: N/A**

**N. GRADING METHOD: A-F**

**O. SUGGESTED MEASUREMENT CRITERIA/METHODS:**

- Homework
- Quizzes
- Tests
- Lab Exercises/documentation
- Practical evaluation of skills

**P. DETAILED COURSE OUTLINE:**

1. Introduction to GMAW/FCAW, & Welding Safety
2. Equipment Setup and Controls, & Shielding Gases and Regulation Equipment
3. GMAW and FCAW Electrodes, & Weld Joints, Weld Types, and Welding Symbols
4. GMAW Procedures and Techniques
5. GMAW Procedures for Carbon Steels
6. GMAW Procedures for Stainless Steels
7. GMAW Procedures for Aluminum
8. GMAW Procedures for Sheet Metal
9. FCAW Procedures and Techniques
10. FCAW Procedures for Carbon Steels
11. FCAW Procedures for Stainless Steels
12. FCAW Procedures for Cast Iron
13. FCAW Procedures for Surfacing Welds
14. Welding Procedures, Defects, and Corrective Actions

**Q. LABORATORY OUTLINE:**

1. Lab Orientation/Safety
2. Equipment Setup and Controls 1
3. Equipment Setup and Controls 2
4. Shielding Gases and Regulation Equipment
5. Equipment Setup and Controls
6. Weld Joints, Weld Types, and Welding Symbols
7. GMAW Procedures and Techniques 1
8. GMAW Procedures and Techniques 2
9. GMAW Procedures for Carbon Steels 1
10. GMAW Procedures for Carbon Steels 2
11. GMAW Procedures for Stainless Steels 1
12. GMAW Procedures for Stainless Steels 2
13. GMAW Procedures for Aluminum 1
14. GMAW Procedures for Aluminum 2
15. GMAW Procedures for Sheet Metal 1
16. GMAW Procedures for Sheet Metal 2
17. FCAW Procedures and Techniques 1
18. FCAW Procedures and Techniques 2
19. FCAW Procedures for Carbon Steels 1
20. FCAW Procedures for Carbon Steels 2
21. FCAW Procedures for Stainless Steels 1
22. FCAW Procedures for Stainless Steels 2
23. FCAW Procedures for Cast Iron 1
24. FCAW Procedures for Cast Iron 2
25. FCAW Procedures for Surfacing Welds 1
26. FCAW Procedures for Surfacing Welds 2
27. Welding Procedures, Defects, and Corrective Actions 1
28. Welding Procedures, Defects, and Corrective Actions 2