WELD 103 Course Outline as of Fall 2024

CATALOG INFORMATION

Dept and Nbr: WELD 103 Title: FLUX CORED ARC WELDING
Full Title: Introduction to Flux Cored Arc Welding (FCAW)
Last Reviewed: 3/9/2020

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	6	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 or P/NP
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	

Catalog Description:
An introduction to the principles of flux core arc welding (FCAW), setup/use of FCAW equipment, and safe use of tools and equipment. Provides instruction in welding carbon steel weld joints in various positions.

Prerequisites/Corequisites:
Course Completion of WELD 170 (or WELD 70 or WELD 70A)

Recommended Preparation:
Eligibility for ENGL 100 OR EMLS 100 (formerly ESL 100) or equivalent

Limits on Enrollment:

Schedule of Classes Information:
Description: An introduction to the principles of flux core arc welding (FCAW), setup/use of FCAW equipment, and safe use of tools and equipment. Provides instruction in welding carbon steel weld joints in various positions. (Grade or P/NP)
Prerequisites/Corequisites: Course Completion of WELD 170 (or WELD 70 or WELD 70A)
Recommended: Eligibility for ENGL 100 OR EMLS 100 (formerly ESL 100) or equivalent
Limits on Enrollment:

Transfer Credit:
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:	Effective:	Inactive:
UC Transfer:	Effective:	Inactive:

CID:

Certificate/Major Applicable:
Both Certificate and Major Applicable

COURSE CONTENT

Student Learning Outcomes:
At the conclusion of this course, the student should be able to:
1. Demonstrate safe use of the tools and equipment in a welding shop.
2. FCAW weld in various positions
3. Demonstrate competent hand-eye coordination necessary to control molten metal and produce aesthetically pleasing appearance and strength in various metals.

Objectives:
At the conclusion of this course, the student should be able to:
1. Categorize the personal traits that employer look for in their employees.
2. Describe the FCAW process and list the other terms used to identify the process.
3. Evaluate safety issues as they pertain to shop safety, industrial safety, and personal safety and apply appropriate safety protective measures.
4. Recall common terminology used in the application of welding operations.
5. Organize common weld joint considerations and list the types of welds that can be applied to each joint.
6. Analyze welding operation requirements for common applications and select the proper power source.
7. Correctly assemble the parts of a FCAW welding station and wire feeder.
8. Name common FCAW filler metals and discuss their advantages/disadvantages for welding carbon steel alloys.
9. Summarize shielding gases used in FCAW and describe their characteristics and effectiveness.
10. Compare and contrast the similarities and difference between self-shielded and gas shielded FCAW.
11. Examine related equipment maintenance requirements and apply correct tasks to ensure safe and effective operation.
12. Demonstrate pre-weld procedures and apply correct welding parameter adjustment tasks.
13. Employ pre-weld metal preparation techniques to ensure weld quality.
14. Apply foundational skills to weld carbon steel to industry-based acceptance criteria.

15. Label common types of weld discontinuities and examine their root cause and prevention measures.

Topics and Scope:

I. Occupational Orientation
II. Introduction to FCAW
III. Welding Safety
IV. Terms and definitions
V. Weld Joints and weld types
VI. FCAW power supplies
VII. FCAW equipment and wire feeders
VIII. FCAW filler metals
IX. Shielding gases and regulation
X. Modes of metal transfer
XI. FCAW equipment setup and operation
XII. Equipment maintenance and repair
XIII. Base metal and weld joint preparation
XIV. Procedures and techniques for welding carbon steel
XV. Welding defects, discontinuities, and corrective action

All topics are covered in the lecture and lab portions of the course.

Assignment:

Assigned projects should supplement the course content

Lecture-Related Assignments:
1. Weekly reading assignments, 10-15 pages per week.
2. Homework
3. Quizzes and Exams

Lab-Related Assignments:
1. Welding skills assignments

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.

Homework problems	Problem solving 10 - 20%

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

Welding skills assignments	Skill Demonstrations 50 - 60%

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

Quizzes and Exams	Exams 10 - 20%

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

Participation	Other Category 0 - 10%

Representative Textbooks and Materials:
Modern Welding. 12th ed. Bowditch, William and Bowditch, Kevin and Bowditch, Mark. Goodheart Wilcox. 2020
Welding Principles and Applications. 8th ed. Jeffus, Larry. Cengage. 2017
Welding Skills. 5th ed. Moniz, B.J. American Technical Publishers. 2015 (classic)
Modern Welding. 12th ed. Bowditch, William and Bowditch, Kevin and Bowditch, Mark. Goodheart-Willcox. 2020