

Basic Course Information

Semester:	Spring 2022	Instructor Name:	Samuel Colton
Course Title & #:	Weld 115 FCAW	Email:	samuel.colton@imperial.edu
CRN #:	20918	Webpage (optional):	
Classroom:	3120	Office #:	3120
Class Dates:	FEB 14, 2022 to Jun 10, 2022	Office Hours:	TBD-Weekly
Class Days:	M 6:00PM-08:05PM LEC/DIS M 8:05PM-9:10PM LAB	Office Phone #:	760-355-6319 Secretary/Division Office 760-355-6361 Secretary/Dean's Office 760-355-6217 Division Coordinator 760-355-6361
Class Times:	W 6:00AM-09:10PM LAB	Emergency Contact:	
Units:	3 units		

Course Description

Complete study course in Flux Core Arc Welding process and safety. The course is created to prepare the students for entry welding performance test in manufacturing, fabrication, structural, and shipyard industries. Student will practice welding to build skills in FCAW process. Safety, equipment setup, trouble-shooting, and proper use of measuring tools will be complementing this course. (CSU) Safety and PPE (Proper Personal Equipment) is enforced through the course. (CSU)

Student Learning Outcomes

Upon course completion, the successful student will have acquired new skills, knowledge, and/or attitudes as demonstrated by being able to:

1. 1 discuss three welding hazards specifically associated with the FCAW process and list potential abatement action for these hazards. (ILO1, ILO2, ILO3)
2. List the two most common shielding methods used in FCAW and define the advantages and disadvantages of the various shielding methods. (ILO1, ILO2)
3. Set up the equipment used in FCAW, set up all parameters associated with welding ¼ and 3/8 inch steel plate, and safety demonstrate the adjustment of essential variables per given WPS. (ILO1, ILO2, ILO3)
4. Fabricate various assigned weld joints safely demonstrating and using the forehand and backhand welding techniques per the given WPS. (ILO1, ILO2, ILO3)

Explain the relationship between a Welding Code, a Welding Standard, a Procedure Qualification Record (PQR) and a Welding Procedure Specification (WPS0). (ILO1, ILO4)

Course Objectives

Course Goals:

- 1.1 Develop understanding of safe practices associated with the set up and use of FCAW welding equipment it relates to welding of steel plate.
- 1.2 Develop understanding of safe practices associated with use of related equipment for cutting, grinding and preparation of material for plate welding.
- 1.3 Develop skills in the use of FCAW (Flux Core Arc Welding) equipment for application in the welding of steel plate.

Textbooks & Other Resources or Links

Welding Fundamentals

Edition: 6th

ISBN: 9781645646938

Author: Bowditch (William A Bowditch, Kevin E. Bowditch and Mark A. Bowditch)

Publisher: Goodheart-Willcox Publisher

Formats: Hardcover

Copyright Year: 2020

William A Bowditch, Kevin E. Bowditch and Mark A. Bowditch

In addition, teaching material, assignments and presentations will correspond to written examinations, laboratory assignments, class room presentations and Final Examination. Presentations and familiarizations are conducted by reviewing handbooks and publications published by the American Welding Society, American National Standards Institute (ANSI) the Occupational Safety and Health Administration (OSHA), Oxyfuel Gas Welding, Cuttings and Heating Safety, and Safety in Welding, Cutting and Allied Processes (ANSI) Z49.1

The student must be able to understand and demonstrate the basic techniques in the FCAW process. Also, students must be able to demonstrate proper use and identification of fire extinguisher classification, burns/electrical hazards respiratory protection, AWS standards, health and safety, and fire protection.

In addition, students must take personal responsibility for their own safety and the safety of others. The teacher will discuss, explain in detail and demonstrate each FCAW welding techniques.

As provided or required, all students and faculty will bring, make use of at each class such (PPE) personal protective equipment as to provide personal protection for the work being performed. All students will secure use of as provided or required an OSHA/ANSI approved PPE clear safety glasses.

- Follow all other IVC policies and guidelines etc....

Course Requirements and Instructional Methods

Out of Class Assignments: The Department of Education policy states that one (1) credit hour is the amount of student work that reasonably approximates not less than one hour of class time and two (2) hours of out-of-class time per week over the span of a semester. WASC has adopted a similar requirement.

COURSE LAB WILL BE FACE TO FACE INSTRUCTION SUBJECT TO CHANGE DUE TO COVID-19 RESTRICTIONS.

Methods of instruction for learning:

- Lecture
- Institutional Technology Presentations
- Group and Individual Discussions
- Demonstration
- Outside Assignments

Learning activities

- Individual and group learning activities
- Individual and group discussions
- Individual and group oral presentations
- Individual and group classroom/lab demonstrations
- Other, as the instructor may determine appropriate in and out of class learning assignments, use of computer technology, writing assignments and library research assignments

Course Grading Based on Course Objectives

Evaluation:

- Class participation required
- Written and practical test
- Quizzes/exams
- Group and individual projects
- Assignments (written reports, class/lab excises and homework)

1. **Attendance:** first day of class, regular attendance and withdrawal after exceeding the number of class hours per week.
2. **Tardiness:** three times equals one absence (I.V.C. Gen. Catalog pg. 24) 09-10
3. **Absences:** 3 absences= automatic drop (I.V.C. Gen catalog pg.24) 09-10
4. **Student Conduct:** (I.V.C. Gen. catalog pg. 22) 2009-10

5. Grading System (I.V.C. Gen catalog pg.17)

A= 90%-100% of points= Excellent

B= 80%-89% of points= Good

C= 70%-79% of points= Satisfactory

D= 60%-69% of points= Pass, less that satisfactory

F= Less than 60% of points= Failing

Competences:

- Develop understanding of qualification and certification under the requirements of the A.W.S (American Welding Society) D.1 Structural Welding Code and other applicable welding standards.
- Demonstrate safe work practices as they relate to use of equipment for materials preparation, performance of welding applications and participation in the classroom and laboratory environment.
- Demonstrate understanding of methods used to select equipment, consumable, qualify weld procedures, certification of welders and the methods used to test and evaluate results of such test for open v-groove welds.
- Demonstrate understanding of the correct weld techniques necessary to complete weld under the AWS (American Welding Society) D.1 Structural Welding Code and other applicable welding standards.

Attendance

- A student who fails to attend the first meeting of a class or does not complete the first mandatory activity of an online class will be dropped by the instructor as of the first official meeting of that class. Should readmission be desired, the student's status will be the same as that of any other student who desires to add a class. It is the student's responsibility to drop or officially withdraw from the class. See [General Catalog](#) for details.
- Regular attendance in all classes is expected of all students. A student whose continuous, unexcused absences exceed the number of hours the class is scheduled to meet per week may be dropped. For online courses, students who fail to complete required activities for two consecutive weeks may be considered to have excessive absences and may be dropped.
- Absences attributed to the representation of the college at officially approved events (conferences, contests, and field trips) will be counted as 'excused' absences.

Classroom Etiquette

- Electronic Devices: Cell phones and electronic devices must be turned off and put away during class, unless otherwise directed by the instructor.
- Food and Drink are prohibited in all classrooms. Water bottles with lids/caps are the only exception. Additional restrictions will apply in labs. Please comply as directed by the instructor.
- Disruptive Students: Students who disrupt or interfere with a class may be sent out of the room and told to meet with the Campus Disciplinary Officer before returning to continue with coursework. Disciplinary procedures will be followed as outlined in the [General Catalog](#).
- Children in the classroom: Due to college rules and state laws, no one who is not enrolled in the class may attend, including children.

Online etiquette

- What is netiquette? Netiquette is internet manners, online etiquette, and digital etiquette all rolled into one word. Basically, netiquette is a set of rules for behaving properly online.
- Students are to comply with the following rules of netiquette: (1) identify yourself, (2) include a subject line, (3) avoid sarcasm, (4) respect others' opinions and privacy, (5) acknowledge and return messages promptly, (6) copy with caution, (7) do not spam or junk mail, (8) be concise, (9) use appropriate language, (10) use appropriate emoticons (emotional icons) to help convey meaning, and (11) use appropriate intensifiers to help convey meaning [do not use ALL CAPS or multiple exclamation marks (!!!)].

Academic Honesty

Academic honesty in the advancement of knowledge requires that all students and instructors respect the integrity of one another's work and recognize the important of acknowledging and safeguarding intellectual property.

There are many different forms of academic dishonesty. The following kinds of honesty violations and their definitions are not meant to be exhaustive. Rather, they are intended to serve as examples of unacceptable academic conduct.

- Plagiarism is taking and presenting as one's own the writings or ideas of others, without citing the source. You should understand the concept of plagiarism and keep it in mind when taking exams and preparing written materials. If you do not understand how to "cite a source" correctly, you must ask for help.
- Cheating is defined as fraud, deceit, or dishonesty in an academic assignment, or using or attempting to use materials, or assisting others in using materials that are prohibited or inappropriate in the context of the academic assignment in question.

Anyone caught cheating or plagiarizing will receive a zero (0) on the exam or assignment, and the instructor may report the incident to the Campus Disciplinary Officer, who may place related documentation in a file. Repeated acts of cheating may result in an F in the course and/or disciplinary action. Please refer to the [General Catalog](#) for more information on academic dishonesty or other misconduct. Acts of cheating include, but are not limited to, the following: (a) plagiarism; (b) copying or attempting to copy from others during an examination or on an assignment; (c) communicating test information with another person during an examination; (d) allowing others to do an assignment or portion of an assignment; (e) using a commercial term paper service.

Additional Student Services

Imperial Valley College offers various services in support of student success. The following are some of the services available for students. Please speak to your instructor about additional services which may be available.

- [Blackboard Support Site](#). The BLACKBOARD OR CANVAS Support Site provides a variety of support channels available to students 24 hours per day.

- **Learning Services.** There are several learning labs on campus to assist students through the use of computers and tutors. Please consult your [Campus Map](#) for the [Math Lab](#); [Reading, Writing & Language Labs](#); and the [Study Skills Center](#).
- **Library Services.** There is more to our library than just books. You have access to tutors in the [Study Skills Center](#), study rooms for small groups, and online access to a wealth of resources.

Disabled Student Programs and Services (DSPS)

Any student with a documented disability who may need educational accommodations should notify the instructor or the [Disabled Student Programs and Services](#) (DSP&S) office as soon as possible. The DSP&S office is located in Building 2100, telephone 760-355-6313. Please contact them if you feel you need to be evaluated for educational accommodations.

Student Counseling and Health Services

Students have counseling and health services available, provided by the pre-paid Student Health Fee.

- **Student Health Center.** A Student Health Nurse is available on campus. In addition, Pioneers Memorial Healthcare District provide basic health services for students, such as first aid and care for minor illnesses. Contact the IVC [Student Health Center](#) at 760-355-6128 in Room 1536 for more information.
- **Mental Health Counseling Services.** Short-term individual, couples, family, and group therapy are provided to currently enrolled students. Contact the IVC [Mental Health Counseling Services](#) at 760-355-6196 in Room 2109 for more information.

Student Rights and Responsibilities

Students have the right to experience a positive learning environment and to due process of law. For more information regarding student rights and responsibilities, please refer to the IVC [General Catalog](#).

Information Literacy

Imperial Valley College is dedicated to helping students skillfully discover, evaluate, and use information from all sources. The IVC [Library Department](#) provides numerous [Information Literacy Tutorials](#) to assist students in this endeavor.

Anticipated Class Schedule/Calendar

Date or Week	Activity, Assignment, and/or Topic	Pages/ Due Dates/Tests
M1/W1: Safety and Health of Welders	Safety Assigned Reading from Text: Ch. 2:19 -35 Safety in the Welding Shop	As assigned February 14th & 16th
Demonstrates proper use and inspection of personal	Orientation to course, "Safety" discussion, PPE and lab equipment set up.	Safety Quiz I February 21st Start of Class.

<p>protection equipment (PPE).</p>	<p>Students will demonstrate use of PPE by wearing required items designated for class participation i.e. hearing protection, safety eye wear, cap, welding jacket, welding gloves, work boots. Students will demonstrate booth and welding equipment set up.</p>	
<p>Demonstrates proper safe operation practices in work area.</p>	<p>Student will demonstrate housekeeping, organization of lab equipment, use of peripheral hand and power tools for measurement, cutting, edge preparation by thermal cutting or grinding.</p>	
<p>Demonstrates proper use and inspection of ventilation equipment</p>	<p>Student will demonstrate understanding and use of fume exhaust system and other means of fume control or fume mitigation.</p>	
<p>Demonstrates proper Hot Zone operation</p>	<p>Student will demonstrate understanding of practices and precautions to be taken when welding in the lab and how to apply them to the work place.</p>	
<p>Demonstrates proper work actions for working in confined spaces.</p>	<p>Student will demonstrate understanding of steps to be taken regarding working in a confined space and explain some of the practices to be followed regarding personal safety and workplace precautions.</p>	
<p>Demonstrates proper use of precautionary labeling and MSDS information</p>	<p>Student will explain how to locate SDS information as it relates to welding consumables use, identify hazards listed by the SDS and precautions to be taken.</p>	<p>Complete at end of each class general housekeeping associated with lab activity.</p>

M2/W2: FCAW Equipment Assembly and Adjustment	Assigned Reading: Chapter 16: Pages 229-242 Participate in lecture discussion / Participate in lab activity as directed as instructed.	Reading as assigned. Student to prepare FCAW report per course outline section VIII submit by week 8.
Student will set up and adjust equipment for GMAW/FCAW	Student will perform booth and equipment set. Perform initial GMAW/FCAW welds as instructed on materials provided.	Perform "Out of Class" assignement per course outline Section VIII due week 8, and lab activity as assigned
M3/W3-4-5: Discussion Topics: Technical Drawings, Weld Symbols, Electrical Fundamentals FCAW 1G/2G Plate Practice	Assigned reading from text. Student will read: Week 3 Chapter 15: Pages 209-223 and Week 4 Chapter 16: Pages 229-242 Week 5 Chapter 17: Pages 247-259 Student will draw materials to fabricate a FCAW practice X-Block and perform welds in the 1G & 2G position until block is filled and accepted by the instructor.	* Perform assigned reading Performed assigned weld practice
M4/W6-7-8: FCAW 3G/4G Plate Practice. Note: Mid Term Exam W8	Student will draw materials to fabricate a FCAW practice X-Block and perform welds in the 3G & 4G position until block is filled and accepted by the instructor Student will perform other Chapter 16 & 17 welding performance skill development activity as assigned by the instructor after X-Block activity completion.	Perform safety inspections of FCAW equipment and accessories. Student will prepare for and take the mid-semester written exam
M5/ W9-10-11-12: Inspection & Testing of Welds	Assigned Reading: Week 9 Chapter 36: Pages 557-558 Week 9 Chapter 37: Pages 577-590 Student will draw materials to prepare, practice and perform welder qualification test as instructed. Performs FCAW welder performance qualification test (1G,2G,3G,4G, uphill, limited thickness test plates) on carbon steel as instructed.	Student Performs FCAW welder performance qualification test (1G, 2G,3G,4G, uphill, limited thickness test plates) on carbon steel as instructed.
M5/ W9-13-14-15: Unlimited Weld Testing	Prepared students will schedule & performs FCAW welder performance qualification test (2G,3G, or 4G, uphill, unlimited thickness test plates) on carbon steel as instructed. Students will prepare until able to test.	Students who have completed all preparation assignments will test for unlimited

*M5/W16: Final Written Exam	* Students will assist in the lab clean up, help to secure equipment, and take final written exam as instructed	*Final Written Exam
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