

### Basic Course Information

Semester:	Spring 2016	Instructor Name:	Oscar Cervantes
Course Title & #:	Flux Core Arc Welding On Plate	Email:	Oscar.cervantes@imperial.edu
CRN #:	20977	Webpage (optional):	
Classroom:	3120	Office #:	3121
Class Dates:	16 Feb 2016- 10 June 2016	Office Hours:	5pm-6pm M-W
Class Days:	Saturdays	Office Phone #:	(760) 909-1749
Class Times:	8:00am-2:30pm	Emergency Contact:	
Units:	3		

### Course Description

This course is designed to be a study of Flux Cored Arc Welding (FCAW). This course is one of the required courses in the Welding Technology Program. The student will develop the theory and knowledge base to be able to safely and properly practice welding techniques in Flux Cored Arc Welding (FCAW) on Structural Steel (A-36) plate. To support and enhance the understanding and application of FCAW and Welding Technology principles, the student will develop an understanding of Industrial Safety Standards, Technical Drawings, Weld/Welding Symbols, Electrical Fundamentals, Fundamental FCAW Welding Metallurgy, Fundamentals of Quality Assurance, Welding Codes (AWS D1.1), and Weld Testing/Inspection. The development of welding skills sets and practices for FCAW applications on plate will require the proper use of Personal Protective Equipment (PPE) and the diligent application of all Safety Rules. (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. Explain the legal responsibilities of Employers, Supervisors, and Welding Personnel with regard to “Right to Know” OSHA regulations. (ILO1, ILO3)
2. Discuss three (3) health Hazards associated with FCAW and discuss appropriate abatement action for these hazards. (ILO1, ILO2, ILO5)
3. List and explain two (2) shielding methods used in FCAW for a given Welding Procedure Specification (WPS) and explain advantages/disadvantages of these shielding methods. (ILO1, ILO2)
4. Complete a written report based on information gathered from a Technical Literature Review of “Flux Cored Arc Welding and its Many Uses in Construction and Manufacturing.” (ILO1, ILO4)

5. Define the physical and mechanical properties of Structural Steel (A-36) and how these are influenced by Flux Cored Arc Welding (FCAW) (ILO1, ILO2)

### Course Objectives

Upon satisfactory completion of the course, students will be able to:

1. Understand, recognize, and demonstrate safe practices and proper use of related tools.
2. Understand and apply FCAW terminology and weld/welding symbols.
3. Understand and apply the principles of filler materials science and welding metallurgy.
4. Understand and explain the electrical fundamentals applicable to FCAW welding power sources.
5. Understand and explain the set-up and operation of welding circuits and power sources.
6. Understand and demonstrate the principles of Flux Cored Arc Welding (FCAW).
7. Understand and demonstrate the principles of Quality Assurance and Weld Inspection.

### Textbooks & Other Resources or Links

- Minnick, William H. 2008. *Flux Cored Arc Welding* 3rd . The Goodheart-Wilcox Company, Inc. ISBN: EW-369 FCAW.

### Course Requirements and Instructional Methods

Demonstration

Discussion

Group Activity

Individual Assistance

Lab Activity

Lecture

Simulation/Case Study

Audio Visual

Media Presentations

Computer Assisted Instruction

Two (2) hours of independent work done out of class per each hour of lecture or class work, or 3 hours lab, practicum, or the equivalent per unit is expected.

**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.

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#### Course Grading Based on Course Objectives

Class Activity

Mid-Term/Final Exam(s)

Objective

Problem Solving Exercise

Quizzes

Skill Demonstration

Written Assignments

#### 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 Netiquette

- 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 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

*[Required language.]*

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**

*[Required Information – Discretionary Language and Formatting: The instructor will provide a tentative, provisional overview of the readings, assignments, tests, and/or other activities for the duration of the course. A table format may be useful for this purpose.]*

<b>Date or Week</b>	<b>Activity, Assignment, and/or Topic</b>	<b>Pages/ Due Dates/Tests</b>
<b>Week 1 Feb 20 2016</b>	<b>Syllabus &amp; Introduction A. Safety in the Welding Shop</b>	<b>Pages 13-30</b>
<b>Week 2 Feb 27 2016</b>	<b>Continues Safety in the Welding Shop</b>	<b>Pages 13-30</b>
<b>Week 3 March 5</b>	<b>B. Flux Core Arc Welding and its Terminology</b>	<b>Pages 191-222</b>
<b>Week 4 March 12</b>	<b>Continues Flux Core Arc Welding and its Terminology</b>	<b>Pages 191-222</b>
<b>Week 5 March 19</b>	<b>Continues Flux Core Arc Welding and its Terminology</b>	<b>Pages 191-222</b>
<b>Week 6 March 26</b>	<b>C. Material Science and Welding Metallurgy</b>	<b>Pages 559-593</b>
<b>Week 7 April 2</b>	<b>Continues Material Science and Welding Metallurgy</b>	<b>Pages 559-593</b>
<b>Week 8 April 9</b>	<b>D. Electrical Fundamentals and FCAW power sources</b>	<b>Pages 483-507</b>
<b>Week 9 April 16</b>	<b>Continues Electrical Fundamentals and FCAW power sources</b>	<b>Pages 483-507</b>
<b>Week 10 April 23</b>	<b>Continues Electrical Fundamentals and FCAW power sources</b>	<b>Pages 483-507</b>
<b>Week 11 April 30</b>	<b>E. Flux Core Arc Welding</b>	<b>Pages 267-302</b>

<b>Date or Week</b>	<b>Activity, Assignment, and/or Topic</b>	<b>Pages/ Due Dates/Tests</b>
<b>Week 12</b> <b>May 7</b>	<b>Continues</b> <b>Flux Core Arc Welding</b>	<b>Pages 267-302</b>
<b>Week 13</b> <b>May 14</b>	<b>F. Welding Quality Assurance, Welding Testing, and Inspection.</b>	<b>Pages 771-801</b>
<b>Week 14</b> <b>May 21</b>	<b>Continues</b> <b>Welding Quality Assurance, Welding Testing, and Inspection.</b>	<b>Pages 771-801</b>
<b>Week 15</b> <b>May 28</b>	<b>Review</b>	
<b>Week 16</b> <b>June 4</b>	<b>Finals</b> <b>Written Final Exam</b> <b>Perphormance</b>	

**\*\*\*Tentative, subject to change without prior notice\*\*\***