

### Basic Course Information

|                   |                           |                     |  |
|-------------------|---------------------------|---------------------|--|
| Semester:         | <b>SPRING 2024</b>        | Instructor Name:    | <b>Carlos Araiza</b>   |
| Course Title & #: | <b>Weld 225</b>           | Email:              | <b>Carlos.araiza@imperial.edu</b>  |
| CRN #:            | <b>20566</b>              | Webpage (optional): |  |
| Classroom:        | <b>3120</b>               | Office #:           | <b>3122</b>  |
| Class Dates:      | <b>15 APR-09 JUN 2024</b> | Office Hours:       | <b>1.00-2.00 PM</b>  |
| Class Days:       | <b>M T W R</b>            | Office Phone #:     | <b>Secretary/Division Office<br/>760-355-6361<br/>Secretary/Dean's Office<br/>760-355-6217<br/>Division Coordinator<br/>760-355-6361</b> |
| Class Times:      | <b>0800-1120 AM</b>       | Emergency Contact:  |  |
| Units:            | <b>3 units</b>            |                     |  |

### Course Description

Emphasis is on advances Gas Tungsten Arc Welding on carbon steel, and stainless steel purged pipe. The student will develop the theory and knowledge on safety and properly practice in GTAW on carbon steel pipe with open root and on stainless steel thin wall tube. The student will learn the fundamental aspects of Industrial Standards ,Technical Drawings , Welding Symbols Fundamentals of GTAW Welding codes Testing and Inspection. And the proper use of PPE and the applications of personal protective equipment with the application of all Safety Rules.

### Student Learning Outcomes

#### Required language

1. Describe four major hazards related to GTAW on pipe and potential abatement of these hazards as they pertain to shop safety. (ILO1, ILO2, ILO3)
2. Explain and safely demonstrate multiple beading and application in GTAW for welding on pipe and tube. (ILO1, ILO2, ILO3)
3. Select the proper wilding filler materials for welding on various alloys as specified on the given WPS. (ILO1, ILO2, ILO3)
4. Identify, recognize, and safely apply the essential variables associated with pipe and tube welding using the open root technique per the given WPS. (ILO1, ILO2, ILO3)

5. Reference the appropriate Welding Codes (AWS, API, and/or ASME) to determine the acceptance criteria for the welding of 6 inch schedule 80 carbon steel pipe in the 5G position and safety complete one joint per given WPS. (ILO1, ILO2, ILO3, ILO4)

### Course Objectives

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

1. Demonstrate and utilize safety protocols through the course.
2. Initiate the set-up of welding equipment while demonstrating safety protocols.
3. Study and comprehend the theory behind Gas Tungsten Arc Welding on pipe.
4. Demonstrate the ability to cut and prepare pipe ends for welding.
5. Demonstrate the ability to weld pipe to x-ray quality.

### Textbooks & Other Resources or Links

**Required: Yes**

**Modern Welding 12<sup>th</sup> edition. G-W Publisher. Technical Guide. Available in the book store.**

ISBN 978-163563-686-4

### 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.

#### Methods of Instruction for Learning:

1. Demonstration
2. Discussion
3. Group activity
4. Individual assistance
5. Lab activity
6. Lecture
7. Simulation/case study
8. Audio visual computer assisted instruction

Two hours off 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.

#### Equipment and Supplies

- Personal protective Equipment (PPE)
  1. Welding helmet
  2. Welding and cutting face shield
  3. Welding Cap
  4. Welding Gloves
  5. Leather Work Boots
  6. Ear plugs/protection

7. Leather jacket or sleeve

### Course Grading Based on Course Objectives

For successful completion of this course the student will need to be present for and participate in all lectures and /or discussions and complete all course assignments in a timely manner , in addition to completing all homework , reading, quizzes , test, and evaluations that will be assigned throughout the course.

Your Final Grade will be calculated as an average of the assignments in these four categories;

25% Class Quizzes

25% Homework Assignments

25% Lab/Shop Assignments

25% Evals. And Exams

These categories are made up of all assignments ,evaluations, test, quizzes the comprehensive final exam and other exercises on Hands- on -Training for the final practical exam on Pipe Welding.

|                       |             |
|-----------------------|-------------|
| Chapter quizzes (8) = | 400 points  |
| Final Exam Witten =   | 300 points  |
| Final Lab Exam=-      | 300 points  |
| Total points possible | 1000 points |

A=90%-100% = Excellent

B=80%- 89% = Good

C= 70%-79% = Satisfactory

D= 60% -69% Pass, less Satisfactory

F= Less than 60% = Failing

### 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**

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                                |
|--|---|---|
| <b>Module 2:<br/>Safety and<br/>Health of<br/>Welders</b>                      |   |   |
| Demonstrates proper use and inspection of personal protection equipment (PPE). | Text:<br>Ch. 1:14, 16-17, 20-21, 25, 27, 30-33<br>Ch. 5: 147-150<br>Ch. 6: 160-161, 186, 228-229<br>Ch. 7: 228<br>Ch. 8: 249, 252, 264<br>Ch. 9: 302<br>Ch. 10: 311-312<br>Ch. 11: 349-350<br>Ch. 12: 392<br>Ch. 14: 419<br>Ch. 16: 478-479<br>Ch. 18: 526<br>Ch. 22: 621 | Lessons 1A, 1B, 1C, 1D, 5B, 6A, 8A, 9A, 11B, 17A, 23A |
| Demonstrates proper safe operation practices in work area.                     | Text:<br>Ch. 1: 14-15, 18-19, 25-33<br>Ch. 5: 146<br>Ch. 10: 311-312<br>Ch. 12: 392-395<br>Ch. 14: 410-415, 4298-430<br>Ch. 16: 478-479<br>Ch. 22: 621<br>Ch. 32: 825-826, 829-830  | Lessons 1A, 1B, 1C,1D, 6A, 8A, 9A, 11B, 17A, 23A      |
| Demonstrates proper use and inspection of ventilation equipment                | Text:<br>Ch. 1: 19-21, 23-24, 27<br>Ch. 6: 161, 187<br>Ch. 7: 226<br>Ch. 22: 621<br>Ch. 32: 817   | Job 6B-1<br>Lesson 9A                                 |
| Demonstrates proper Hot Zone operation   | Text:<br>Ch. 1: 24-26<br>Ch. 5: 229<br>Ch. 6: 160-161<br>Ch. 12: 393-395<br>Ch. 14: 419<br>Ch. 22: 621  | Lab Workbook:<br>Lessons 1A, 1B, 1C, 1D, 6A, 8A, 11B  |
| Demonstrates proper work actions for   | Text:<br>Ch. 1: 20-21, 24<br>Ch. 7: 226   |   |

| Date or Week  | Activity, Assignment, and/or Topic   | Pages/ Due Dates/Tests  |
|---|--|---|
| <b>Module 2:<br/>Safety and<br/>Health of<br/>Welders</b>                             |  |   |
| working in<br>confined<br>spaces.   | Ch. 8: 264<br>Ch. 14: 430<br>Ch. 22: 621   |   |
| Demonstrates<br>proper use of<br>precautionary<br>labeling and<br>MSDS<br>information | Text:<br>Ch. 1: 27, 31-33<br>Ch. 5: 131, 134<br>Ch. 6 159-160<br>Ch. 8: 236-250<br>Ch. 9: 274-290<br>Ch. 10: 310-311<br>Ch. 12: 364-372<br>Ch. 23: 624-626 | Lessons 1C, 6A and 7B all<br>welding cutting jobs   |
| <b>Module 3:<br/>Drawings and<br/>Welding<br/>Symbol<br/>Interpretation</b>           |  |   |
| Interpret basic<br>elements of a<br>drawing or<br>sketch.                             | Text:<br>Ch. 2: 35-43  | Lab Workbook:<br>Lesson 2<br>All jobs in lessons 6C, 6D<br>and 6E<br>Jobs 9D-2 through 9D-7   |
| Interpret<br>welding symbol<br>information.   | Text:<br>CH. 3: 55-67  | Lab workbook:<br>Lesson 3B<br>Jobs 6E-1 through 6E-4<br>All jobs in lesson 8C<br>All jobs in lesson 9D<br>Jobs 9E-2 through 9E-6<br>All jobs in lesson 12C, 12D<br>and 12E<br>Job 12F-1<br>Job 16A-1<br>Job 20-1<br>Job21-1 |
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| Date or Week  | Activity, Assignment, and/or Topic                 | Pages/ Due Dates/Tests  |
|---|--|---|
| <b>Module 2:<br/>Safety and<br/>Health of<br/>Welders</b>     |  |   |
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| <b>Module 2:<br/>tungsten Arc<br/>Welding<br/>(GTAW)</b>      |  |   |
| Perform safety inspections of GTAW equipment and accessories. | Text:<br>Ch. 7: 192-205<br>Ch. 8: 236, 238         | Lab workbook:<br>Lesson 8A  |
| Make minor external repairs to GTAW equipment and accessories | Text:<br>Ch. 7: 192-206                            | Lab workbook:<br>Job 6B-1   |
| Carbon Steel  |  |   |
| Set up for GTA operations on carbon steel                     | Text:<br>Ch. 7: 192-194, 196-207<br>Ch. 8: 236-252 | Lab workbook:<br>Job 6B-1<br>Lesson 7A<br>Lesson 8A<br>All jobs in lesson 8C<br>Require the setting of variables. |
| Operate GTAW equipment on carbon steel.                       | Ch. 8: 245, 252-262                                | Lab workbook:<br>Lesson 8C<br>All jobs on lesson 8C   |
| Make fillet welds in all positions on carbon steel.           | Text:<br>Ch. 8: 254-261                            | Lab workbook:<br>Job 8C-1<br>Job 8C-2<br>Job 8C-4<br>Job 8C-5<br>Job 8C-7<br>Job 8C-8<br>Job 8C-10<br>Job 8C-11   |

| Date or Week   | Activity, Assignment, and/or Topic         | Pages/ Due Dates/Tests  |
|--|--|---|
| <b>Module 2:<br/>Safety and<br/>Health of<br/>Welders</b>                        |  |   |
| Make groove welds in all positions on carbon steel.                              | Text:<br>Ch. 8: 254, 256-261               |   |
| Authentic Stainless Steel  |  |   |
| Set up for GTAW operations on austenitic stainless steel.                        | Text:<br>Ch. 8: 236-252<br>Ch. 20: 568     | Lab workbook:<br>Lesson 7A<br>Lesson 20<br>Job 20-3                           |
| Operate GTAW equipment on austenitic stainless steel.                            | Text:<br>Ch. 20: 568                       | Lab workbook:<br>Job 8C-13<br>Lesson 20<br>Job 20-3`                          |
| Make fillet welds in the 1F, 2F, and 3F on austenitic stainless steel.           | Text:<br>Ch. 20: 568                       | Lab workbook:<br>Lesson 20<br>Job 20-3  |
| Make groove welds in the 1G and 2G positions on austenitic stainless steel.      | Text:<br>Ch. 20: 568                       | Lab workbook:<br>Job 8C-13  |
| Passes GTAW welder performance qualification test on austenitic stainless steel. | Ch. 31: 797-799                            | Aluminum  |
| Set up for GTA operations on aluminum  | Text:<br>Ch. 8: 236-252<br>Ch. 21: 579-582 | Lab workbook:<br>Lesson 7A<br>Lesson 8B<br>Lesson 8C<br>Lesson 21<br>Job 21-1 |

| Date or Week   | Activity, Assignment, and/or Topic              | Pages/ Due Dates/Tests                 |
|--|---|--|
| <b>Module 2:<br/>Safety and<br/>Health of<br/>Welders</b>      |   |  |
| Operate GTAW equipment on aluminum                             | Text:<br>Ch. 8: 245, 252-262<br>Ch. 21: 579-582 | Lab workbook:<br>Lesson 21<br>Job 21-1 |
| Make fillet welds in the 1F and 2F positions on aluminum.      | Text:<br>Ch. 8: 245-258<br>Ch. 21: 579-582      | Lab workbook:<br>Lesson 21<br>Job 21-1 |
| Make groove welds in the 1G position on aluminum               | Text:<br>Ch. 21: 579-582                        | Lab workbook:<br>Lesson 21<br>Job 21-1 |
| Passes GTAW welder performance qualification test on aluminum. | Text:<br>Ch. 31: 797-799                        |  |
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