IMPERIAL VALLEY COLLEGE

Note to Instructor: Replace the placeholder text beneath the headings with the appropriate information for your course. Please note that all sections, with the exception of "Other Course Information," are required elements.

Basic Course Information

Semester:	**Spring 2021**	SPRING	**2021**
Course Title & #:	**WELD 100**	Email:	**Carlos.araiza@imperial.edu**
CRN #:	**21383**	Webpage (optional):	
Classroom:	**1201-1100**	Office #:	**3121**
Class Dates:	**16 Feb- 11 Jun2021**	Office Hours:	**TBA ONLINE**
Class Days:	**T-R**	Office Phone #:	**442-231-9622**
Class Times:	**R 8:00am-2:30pm ONL-ZM** **R8:00am-2:30pm 3100** **T 8:00am-11:10am 3100** **T 8:00am-11:10pmONL-ZM**	Emergency Contact:	**760) 355-6361 (Dept. Office)** **(760) 355-6308 (campus Security)** **(760) 355-6217 (Dean's Office)**
Units:	5	Class Format:	**Hybrid(Online Lecture/ Face to Face Lab)**

Course Description

The student will be exposed to complete basic study of welding technology up to include health and safety. Personal protective equipment, fire protection and electrical safety. The student practice techniques for skill development in shield metal arc welding (SMAW)., gas tungsten arc welding (GTAW), flux cored arc welding (FCAW), soldering/brazing welding (S/BW), and oxygen-acetylene (OXY-ACE) welding and cutting processes.

In addition, American Welding Society, Code pf Federal Regulations (CFRS), specifications and welding standards will be discussed during the course of this semester.

Course Prerequisite(s) and/or Corequisite(s)

N/A

Student Learning Outcomes

The student must be able to understand and demonstrate the basic techniques in SMAW, GTAW and OXY-ACE, FCAW, S&BW process. Also, students must be able to demonstrate proper use and identification of fire extinguisher classification, first, second and third degree burns/electrical hazards, respiratory protection, AWS Standard, 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 welding technique and process. Students are encouraged to ask questions and/or seek assistance during classroom or welding

presentations, or at any time during the sessions. In the event the student do not comprehend and has a legitimate questions associated with the test book, students are encourage to contact the teacher 24/7.

Students must display team building attitude, interest and goodwill at all time.

Course Objectives

Students are made aware of other organizations. The most common is the American Welding Society and its associated codes:

A. AWS D1. 1 Structural Welding Code Steel
B. AWS D1.2 Structural Welding Code Aluminum
C. AWS D1.3 Structural Welding Code Sheet Metal
D. AWS D1.4 Structural Welding Code Reinforcing Steel
E. AWS D1.5 Bridge Welding Code
F. American National Standards Institute (ANSI) Z49.1 Protective Foot Wear
G. ANSI Z89 Safety Glasses

Further, the following Code of Federal Regulations (CFRs) and National Standards will be briefly discussed during the course of this semester.

A. CFR 29-Labor Occupational Safety and Health Administration
B. CFR 40-Protection of the Environment
C. CFR 49-Transportation of Hazardous Materials

Above mentioned CFRs and/or standards are integral parts and/or associated with welding technology.

Textbooks & Other Resources or L

Welding Technology Fundamentals
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 basis techniques in SMAW, GTAW and OXY-ACE, FCAW, S&BW processes. 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 welding techniques and process.

Students are encourage to ask questions and/or seek assistance during classroom or welding presentations, or at any time during the sessions. In the event the student does not comprehend and has a legitimate questions associated with the text book, students are encourage to contact the teacher 24/7.

Equipment and Supplies

- Personal protective Equipment (PPE)
  1. Safety Glasses
  2. Helmet/Hood
  3. Welding Cap
  4. Welding Gloves
  5. Leather Work Boots
  6. Ear plugs/protection
  7. 100% cotton long sleeve shirt and pants
  8. Leather jacket or sleeve
  9. Al other equipment, materials, and supplies will be contribute to the learning process and success in the course.
  10. For health and safety reasons, students are encourage to purchase their personal protective equipment (welding jacket and welding helmet).
      (NO CONTACT LENSES IN THE LAB)

Course Requirements and Instructional Methods

Lectures, textbook, workbook, assignments .worksheets, video .internet information, live demonstration quizzes, mid-term and final test and out –class assignments.

Course Policies

- 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.
- 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.
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IMPERIAL VALLEY COLLEGE

Other Course Information

Percentages

25% Completed Assignments A

25% Quizzes B

25% Mid- Term C

25% Final Exam D

Exams will consist of information from class lectures, reading assignments, homework, videos, and lab activities.

Make sure to.

1 to bring your textbook every lecture

2 To bring a notebook and pencils

3 TO BE ON TIME FOR THE CLASS

4 To participated during lectures and lab activities.

IVC Student Resources

IVC wants you to be successful in all aspects of your education. For help, resources, services, and an explanation of policies, visit http://www.imperial.edu/studentresources or click the heart icon in Canvas.

Anticipated Class Schedule/Calendar

[Provide a tentative overview of the readings, assignments, tests, and/or other activities for the duration of the course. A table format as in the example below may be used for this purpose.]

Date or Week	Activity, Assignment, and/or Topic	Pages/ Due Dates/Tests
Module 2: Safety and Health of Welders		
Demonstrates proper use and inspection of personal protection equipment (PPE).	Text: Ch. 1:14, 16-17, 20-21, 25, 27, 30-33 Ch. 5: 147-150 Ch. 6: 160-161, 186, 228-229 Ch. 7: 228 Ch. 8: 249, 252, 264 Ch. 9: 302 Ch. 10: 311-312 Ch. 11: 349-350 Ch. 12: 392 Ch. 14: 419	Lessons 1A, 1B, 1C, 1D, 5B, 6A, 8A, 9A, 11B, 17A, 23A

	Ch. 16: 478-479 Ch. 18: 526 Ch. 22: 621	
Demonstrates proper safe operation practices in work area.	Text: Ch. 1: 14-15, 18-19, 25-33 Ch. 5: 146 Ch. 10: 311-312 Ch. 12: 392-395 Ch. 14: 410-415, 4298-430 Ch. 16: 478-479 Ch. 22: 621 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: Ch. 1: 19-21, 23-24, 27 Ch. 6: 161, 187 Ch. 7: 226 Ch. 22: 621 Ch. 32: 817	Job 6B-1 Lesson 9A
Demonstrates proper Hot Zone operation	Text: Ch. 1: 24-26 Ch. 5: 229 Ch. 6: 160-161 Ch. 12: 393-395 Ch. 14: 419 Ch. 22: 621	Lab Workbook: Lessons 1A, 1B, 1C, 1D, 6A, 8A, 11B
Demonstrates proper work actions for working in confined spaces.	Text: Ch. 1: 20-21, 24 Ch. 7: 226 Ch. 8: 264 Ch. 14: 430 Ch. 22: 621	
Demonstrates proper use of precautionary labeling and MSDS information	Text: Ch. 1: 27, 31-33 Ch. 5: 131, 134 Ch. 6 159-160 Ch. 8: 236-250 Ch. 9: 274-290 Ch. 10: 310-311 Ch. 12: 364-372 Ch. 23: 624-626	Lessons 1C, 6A and 7B all welding cutting jobs
Module 3: Drawings and Welding		

Symbol Interpretation		
Interpret basic elements of a drawing or sketch.	Text: Ch. 2: 35-43	Lab Workbook: Lesson 2 All jobs in lessons 6C, 6D and 6E Jobs 9D-2 through 9D-7
Interpret welding symbol information.	Text: CH. 3: 55-67	Lab workbook: Lesson 3B Jobs 6E-1 through 6E-4 All jobs in lesson 8C All jobs in lesson 9D Jobs 9E-2 through 9E-6 All jobs in lesson 12C, 12D and 12E Job 12F-1 Job 16A-1 Job 20-1 Job21-1
Fabricate parts from a drawing or sketch.	Text: Ch. 2: 35-36 Ch. 3: 45-55	Lab workbook: Lesson 2 All jobs use drawing and AWS weld symbols.
Module 4: Shielded Metal Arc Welding (SMAW)		
Perform safety inspections of SMAW equipment and accessories.	Text: Ch. 1: 31-33 Ch. 5: 131,134 Ch. 6: 159-160	Lab workbook: Lesson 1C Lesson 6A Job 6B-1
Make minor external repairs to SMAW equipment and accessories.	Text: Ch. 5: 131, 134-138	Job 6B-1
Set up for (SMAW) operations on carbon steel.	Text: Ch. 6: 158-159, 161-165 Ch. 20: 561	Lab workbook: Job 6B-1 All jobs in lessons 6C, 6D and 6E
Operate SMAW equipment on carbon steel	Text: Ch. 6: 161-172, 176-186	Lab workbook: Jobs 6B-2 through 6B-5 All jobs in lesson 6C, 6D and 6E

Make fillet welds in all positions on carbon steel	Text: Ch. 6: 173-174, 177-180	Lab workbook: Lesson 6C Job 6C-2 Job 6C-3 Lesson 6E Job 6E-1 Job 6E-2 Job 6E-4 Job 6E-5
Make groove welds in all positions on carbon steel	Text: Cha. 6: 173, 180-185	Lab workbook: Lesson 6C Job 6C-1 Job 6C-4 Job 6D-3 Lesson 6E Job 6E-3 Job 6E-6
Passes SMAW welder performance qualification test (2G and 3G, uphill, limited thickness test plates) on carbon steel.	Cha. 31: 797-799	
Module 5: Gas Metal Arc Welding 9GMAW-S, GMAW Spray Transfer		
Note: all jobs in the lab workbook can be modified as necessary by changing the specified metal transfer method.		
Perform safety inspection of GMAW	Text: Ch. 7: 208-22, 226 Ch. 9: 275, 291	Lab workbook Lesson 9A Job 6B-1

equipment and accessories.		
Make minor external repairs to GMAW equipment and accessories.	Text: Ch. 6: 214 Ch. 7: 220 Ch. 9: 278-280, 289-290	Lab workbook: Lesson 7B
	Short circuiting transfer	
Set up for GMAW-S operations on carbon steel.	Text: Ch. 9: 268-270, 274-290	Lab workbook: Lesson 7B Lesson 9C Job 9D-1
Operate GMAW-S equipment on carbon steel	Text: Ch. 9: 268-270, 291-292	Lab workbook: Lesson 9B Lesson 9D Job 9D-6 Lesson 9E All jobs in lesson 9E
Make fillet welds in all positions on carbon steel	Text: Ch.9: 268-270, 293-298	Lab workbook: Job 9D-2 Job 9D-6 Job 9E-1 Job 9E-2 Job 9E-4 Job 9E-5
Make groove welds in all positions on carbon steel.	Text: Ch. 9: 268-270, 294-298	Lab workbook: Job 9E-3 Job 9E-6
Passes GMAW-S welder performance qualifications test on carbon steel.		
	Spray Transfer	
Set up for GMAW (spray) operations on carbon steel.	Text: Ch. 9: 271-290	Lab workbook: Lesson 7B Lesson 9C Job 9D-7
Operate GMAW (spray) equipment on carbon steel	Text: Ch. 9: 271-272, 291-302	Lab workbook: Lesson 9B Lesson 9D Job 9D-3 Bob 9D-4

		Job 9D-5 Job 9D-7
Make fillet welds in 1F and 2F on carbon steel.	Text: Ch. 9: 271-272, 293-296	Lab workbook: Job 9D-3 Job-9D-5
Make groove welds in the 1G position on carbon steel	Text: Ch. 9: 271-272, 294-295	Lab workbook: Job 9D-4
Passes GMAE (spray) welder performance qualifications test on carbon steel.	Ch. 31: 797-799	
Module 6: Flux Cored Arc Welding (FCAW-G/GM, FCAW-S)		
Note: all jobs on the lab workbook can be changed from the GMAW process to the FCAW-G or FCAW method.		
Perform safety inspections of FCAW equipment and accessories.	Text: Ch. 9: 275, 291	Lab workbook: Job 6B-1 Lesson 9A
Make minor repairs to FCAW equipment and accessories.	Text: Ch. 6 214 Ch. 7: 220 Cp. 9: 278- 281, 289-290	
	Gas Shielded	
Set up for KCAW-G/GM	Text: Ch. 9: 273-290	Lab workbook: Lesson 7B Lesson 9C

operations on carbon steel		All jobs on lesson 9D and 9E require the setting of variables.
Operate FCAW-G/GM equipment on carbon steel.	Text: Ch. 9: 291-298	Lab workbook: Lesson 7B Lesson 9C All welding jobs on lesson 9D and 9E require the setting of variables.
Operate FCAW-G/GM equipment on carbon steel.	Text: Ch. 9: 292-298	Lab workbook: Lessons 9D and 9E Jobs 9D-2 through 9D-6 All jobs in lesson 9E
Make fillet welds in all positions on carbon steel	Text: Ch. 9: 293-298	Lab workbook: Lessons 9D and 9E Job 9D-2 Job 9D-3 Job 9D-5 Job 9D-6 Job 9E-1 Job 9E-2 Job 9E-4
Make groove welds in all positions on carbon steel	Text: Ch. 9: 294-298	Lab workbook: Lessons 9D and 9E Job 9D-4 Job9D-7 Job 9E- 3 Job 9E-6
Passes FCAW-G/GM welder performance qualification test on carbon steel.	Ch. 31: 797-799	
	Self- Shielded	
Set up for FCAW_S operations on carbon steel.	Test: Ch. 9: 273-281, 289-290	Lab workbook: Lesson 7B Lesson 9C Job 9D-1
Operate FCAW-S equipment on carbon steel.	Text: Ch. 9: 291-292	Lab workbook: Lessons 9D and 9E All jobs in lessons 9D and 9E.
Make fillet welds in all	Text: Ch. 9: 293-298	Lab workbook: Lessons 9D and 9E

positions on carbon steel.		Job 9D-2 Job 9D-3 Job 9D-5 Job 9D-6 Job 9E-1 Job 9E-2 Job 9E-4
Make groove welds in all positions on carbon steel.	Text: Ch. 9: 294-298	Lab workbook: Job9D-4 Job 9D-7 Job 9E-3 Job 9E-6
Passes FCAW-S welder performance qualification test on carbon steel.	Text: Ch. 31: 797-799	
Module 7: tungsten Arc Welding (GTAW)		
Perform safety inspections of GTAW equipment and accessories.	Text: Ch. 7: 192-205 Ch. 8: 236, 238	Lab workbook: Lesson 8A
Make minor external repairs to GTAW equipment and accessories	Text: Ch. 7: 192-206	Lab workbook: Job 6B-1
Carbon Steel		
Set up for GTA operations on carbon steel	Text: Ch. 7: 192-194, 196-207 Ch. 8: 236-252	Lab workbook: Job 6B-1 Lesson 7A Lesson 8A All jobs in lesson 8C Require the setting of variables.
Operate GTAW equipment on carbon steel.	Ch. 8: 245, 252-262	Lab workbook: Lesson 8C All jobs on lesson 8C

Make fillet welds in all positions on carbon steel.	Text: Ch. 8: 254-261	Lab workbook: Job 8C-1 Job 8C-2 Job 8C-4 Job 8C-5 Job 8C-7 Job 8C-8 Job 8C-10 Job 8C-11
Make groove welds in all positions on carbon steel.	Text: Ch. 8: 254, 256-261	
Authentic Stainless Steel		
Set up for GTAW operations on austenitic stainless steel.	Text: Ch. 8: 236-252 Ch. 20: 568	Lab workbook: Lesson 7A Lesson 20 Job 20-3
Operate GTAW equipment on austenitic stainless steel.	Text: Ch. 20: 568	Lab workbook: Job 8C-13 Lesson 20 Job 20-3`
Make fillet welds in the 1F, 2F, and 3F on austenitic stainless steel.	Text: Ch. 20. 568	Lab workbook: Lesson 20 Job 20-3
Make groove welds in the 1G and 2G positions on austenitic stainless steel.	Text: Ch. 20: 568	Lab workbook: 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: Ch. 8: 236-252 Ch. 21: 579-582	Lab workbook: Lesson 7A Lesson 8B Lesson 8C Lesson 21 Job 21-1
Operate GTAW equipment on aluminum	Text: Ch. 8: 245, 252-262 Ch. 21: 579-582	Lab workbook: Lesson 21 Job 21-1
Make fillet welds in the 1F and 2F positions on aluminum.	Text: Ch. 8: 245-258 Ch. 21: 579-582	Lab workbook: Lesson 21 Job 21-1
Make groove welds in the 1G position on aluminum	Text: Ch. 21: 579-582	Lab workbook: Lesson 21 Job 21-1
Passes GTAW welder performance qualification test on aluminum.	Text: Ch. 31: 797-799	
Module 8: Thermal Cutting Processes Unit 1: Manual Oxyfuel Gas Cuttiong (OFC)		
Perform safety in sections of manual OFC equipment and accessories.	TEXT: CH. 1: 32-33 CH. 11: 328, 333-334	LAB WORKBOOK: LESSON 1b LESSON 11b
MAKE MINOR EXTERNAL REPAIRS TO MANNUAL OFC EQUIPMENT AND ACCESSORIES.	Text: Ch. 11: 342-344, 347-349, 352-354 Ch. 13: 400-402 Fig. 13-12 to 13-14	

Set up fpr manual OFC operations on carbon steel.	Text: Ch. 12: 364-372 Ch. 13: 398-404 Ch. 14: 410-417	Lab workbook: Lesson 14 Job 14-1 Job 14-2
Operate manual OFC equipment on carbon steel.	Text: Ch. 14: 417-426	Lab workbook: Job 14-1 Job 14-2 Job 14-3
Perform straight, square edge cutting operations in the flat position on carbon steel.	Text: Ch. 13: 402-405 Ch. 14: 417-422	Lab workbook: Job 14-1
Perform shape, square edge cutting operations in the flat position on carbon steel.	Text: Ch. 13: 405 Ch. 14: 422-423	Lab workbook: Job 14-2
Perform straight, bevel edge sutting operation in the flat position on carbon steel.	Text: Ch. 14: 422-423	Lab workbook: Job 14-1
Perform scarfing and gouging operations to remove base and weld metal in flat and horizontal positions on carbon steel.	TEXT: CH. 14: 426	LAB WORKBOOK: JOB 14-3
Unit 2: Mechanized Ox fuel Gas Cutting (OFC) (e.g. track burner)		