

Shielded Metal Arc Welding I CRN 13045

COURSE INFORMATION

Instructor: Brent Couch

Course Classroom Locations: V107

Course Meeting Times: 1/16/18-2/08/18 (4 Weeks) Monday-Thursday 7:30AM-12:30PM

Office: V107

Phone: 520-494-5314

E-mail: brent.couch@centralaz.edu (Quickest way to reach me)

Office Hours- Monday 6:30AM-7:30AM. Tuesday-Thursday 12:30PM-1:30PM. Friday 8:00AM-2:00PM by phone, email or appointment only.

Academic Calendar: <https://centralaz.edu/wp-content/uploads/2017/10/AcademicCalendar2018-19.pdf>

CAC Police 24-hour: 520-836-9655

Emergency (blue) phones locations.

For emergency assistance from Campus Police push the red button and a Police Officer will answer.

1. In front (East) of "T" building
2. In front (South) of Residence Life lobby
3. Rear (North) of Residence Life lobby
4. Northwest corner of "H" building
5. Between "N" building and parking lot
6. Between "N" building and Pence

COURSE DESCRIPTION/OBJECTIVES

Course Description: Focus on the Shielded Metal Arc Welding (SMAW) process using DCEN, and DCEP modes. This will include basic equipment set up, electrode selection, proper arc starts, re-starts, and terminations. Basic Oxy-Fuel Cutting and material identification.

Welding will include overlap padding in the flat, horizontal positions. Also covered: AWS typical fillet and lap joint designs in the flat and horizontal positions with an emphasis on proper use and care of equipment and safety procedures.

Objectives: Demonstrate accuracy in the use of manufacturer's operating manuals and best industry practices to safely setup and operate SMAW, OFC and PAC equipment. Properly identify and use personal protective equipment and work procedures as required by ANSI Z49.1:2012. With 80% proficiency perform the various SMAW, OFC, and PAC requirements per NCCER performance evaluations and written tests.

Texts (Required): NCCER Welding Level 1 Training Guide, 5th Edition, ISBN-13: 9780134163116

NCCER Welding Level II Training Guide, 5th Edition, ISBN-13: 9780134163109

Supplies (Required): Gauntlet type all leather welding gloves, Leather work gloves. Welding jacket or leather sleeves. Leather boots that go above the ankle. Clear safety glasses. Welding helmet (auto-darkening recommended). Hardhat with welding helmet attachment. Chipping Hammer. Wire Brush. Slip-joint pliers. Soap stone. Tape measure. Marking tool. Mig Welding Pliers/Welpers. Fillet Weld Gauge (Amazon). Vvac Gauge (Amazon). Folder for storing handouts & notes. Pocket size notebook. Pencil/pen. Bring handouts & notes to each class.

Supplies (Highly Recommended): Hi-lighter marker. Aluminized Carbon Kevlar Back-Hand Pad. 12" combination square. Metal scribe. 28 oz. ball peen hammer.

Transferability: WLD 121 is transferrable as an elective course. If you will be transferring to another college, you should determine with certainty that it will accept and transfer the credit for WLD 121.

All students who require transferability of welding program courses must meet AGEC requirements. See your advisor or learn more at <http://aztransfer.com/generaleducation/>

STUDENT RESPONSIBILITIES/COLLEGE POLICIES/CLASS REQUIREMENTS

Blackboard

The block one schedule is slowly moving to Blackboard. Do not rely only on Bb to determine your current grade. You will need to see me for current grade status. I will do my best to keep Bb up to date. There will be quizzes, trade term exercises, and general assignments posted on a periodic basis. You are required to check in daily. The assignments will open and close at a specified time. Assignments will not be re-opened.

23 Rules to Success

1. Instructor assumes students are adequately prepared for WLD 121.
2. Horseplay will lead to immediate dismissal from the class. If you are not here to learn, please find somewhere else to be.
3. Instructor reserves the right to change delivery & course content based on the needs of class.
4. Sign the Sign-In Sheet **before** the start time of each class, otherwise you **WILL NOT** receive credit for that day's activities.
5. Read, ask questions and make known any problems or concerns you have regarding WLD 121.
6. Contact me with questions and concerns regarding class at any time, no appointment necessary.
7. Keep all assignments (quizzes, exams, and handouts) in a folder or notebook and bring to all classes.
8. Regularly check your email for class information and requirements.
9. On all work turned-in include: your name and actual date you turned in the work.
10. Be prepared for quizzes, tests, and exams.
11. All assignments must be turned in on or before midnight of the last day of instruction.
12. Keep track of your assignments and grade(s) by checking with the instructor.
13. Students are responsible for all missed assignments.
14. College policy prohibits food or drinks in the classroom at any time. Water is okay but place on floor.
15. Central Arizona College Governing Board Policy # 509 "Prohibits smoking, the use of tobacco or other tobacco products in buildings or close proximity of buildings entrances or in any college vehicle." Except for announced breaks, tobacco products are not to be used during class.
16. **Cell phone use is prohibited during class hours except during instructor designed break periods.**
17. Do not attempt to use any equipment that you have not been **trained to use by the instructor** or that has not been assigned to you.
18. Report all unsafe, non-working and/or damaged equipment assigned to you immediately to the instructor. Failure to do so may cause you to be held responsible.
19. Please clean up your area to the instructor's satisfaction when you have completed your work for the day or you **WILL NOT** receive credit for that day's activities.
20. Students with three (3) or more absences will be dropped from the class.
21. If you decide it is necessary to withdraw from class, please follow proper College Procedures.
22. Read the rules and regulations as listed in the CAC Handbook.http://www.centralaz.edu/Home/Student_Resources/Student_Handbook_and_Forms.htm
23. The following conduct is specifically prohibited: verbal and/or nonverbal expressions and actions that could cause serious embarrassment or discomfort to individuals or groups. Violations will lead to your permanent removal from class. Respect everyone. No exceptions.

Additional Required Course Material

- <http://www.aws.org/standards/page/safety-health-fact-sheets>
- https://app.aws.org/technical/AWS_Z49.pdf

Lincoln Electric website-

Literature Request- Free Stuff

https://marcomcentral.app.pti.com/printone/catalog.aspx?uigroup_id=18186

C1.10

https://marcomcentral.app.pti.com/dukeprinting/lincolnusmarketing/addToCart.aspx?uigroup_id=18186&product_id=16&node_id=0

C4.200 GMAW Welding Guide (Gas Metal Arc Welding)

https://marcomcentral.app.pti.com/printone/addToCart.aspx?uigroup_id=18186&product_id=239&node_id=846897

Lincoln Powerwave 350 Owner's Manual

<http://www.lincolnelectric.com/assets/servicenavigator-public/lincoln3/im10007.pdf>

- Miller XMT 350 Owner's Manual
https://www.millerwelds.com/files/owners-manuals/O2247AF_MIL.pdf
- Miller Dynasty Owner's Manual
https://www.millerwelds.com/files/owners-manuals/O2240AJ_MIL.pdf

Useful Links for Learning

- <http://www.lincolnelectric.com/en-us/support/welding-how-to/Pages/preventing-arc-blow-detail.aspx>
- <http://www.weldingtipsandtricks.com>
- http://www.esabna.com/us/en/education/esab_university.cfm
- <https://www.weld-ed.org/>
- <http://www.thefabricator.com/>
- <https://www.millerwelds.com/resources/welding-resources>
- Beware of Joe Bob on YouTube. There is a difference in a sticking two pieces of metal together and being a certified welder.

CBE Module 1

WLD 121 SMAW 1 Required Textbook: NCCER Welding Level One 5th Edition, AWS SENSE Level One Safety Module.

Module Assessment-

- AWS SENSE Level 1. NCCER Welding Level One Modules 1-4,7-9

Competencies-

AWS SENSE Level 1 Safety Module- read safety section and complete test with 100% score as required by AWS standards. (MSLO 1) • https://app.aws.org/technical/AWS_Z49.pdf
<https://www.aws.org/standards/page/safety-health-fact-sheets>

- NCCER Safety Module 1- Read pages 1-45. Score 80% on test. (MSLO 1)
- NCCER Oxyfuel Cutting Module 2- Read pages 1-62. Score 80% on test. (MSLO 2)
- Complete Performance Evaluation on pages 58,59,60 (MSLO 4,5,6,7)
- NCCER SMAW Equipment Set-up Module 7- Read pages 1-31 Score 80% on test. (MSLO 2)
- Complete Performance Evaluation on basic SMAW set up in the DCEP, DCEN modes. (MSLO 4)
- NCCER Plasma Arc Cutting. Module 3- Read pages 1-32. Score 80% on test.(MSLO2)
- Complete performance Evaluation on page 27,28 (MSLO 4,5,6)
- NCCER SMAW Electrodes Module 8- Read pages 1-23 Score 80% on test. (MSLO 2)
- NCCER SMAW Beads and Fillets Module 9- Read pages 1-34 Score 80% on test. (MSLO 2)
- Complete Performance Evaluation on striking an arc, arc re-starts, and arc terminations.
- Complete Performance Evaluation on page 38,43 1F-2F using E7018 electrodes. (MSLO 4,5,6,7)
- Complete Performance Evaluation on page 37,39,41,43 1F-4F using E6010 electrodes.
(MSLO 4,5,6,7)
- Performance evaluation shall be acceptable to industry codes, and performed by an AWS CWI/QC-1. (MSLO 4,5,6,7)
- Complete Performance Evaluation on Page 35,36. Flat and Horizontal overlap. (MSLO 4,5,6,7)
- NCCER Air Carbon Arc Gouging. Module 4- Read pages 1-22. Score 85% on test. (MSLO 2)
- Complete Performance Evaluation on Page 22

Grading

Your final grade will be based on the total number of points accumulated from the NCCER performance evaluations and the following 5 areas:

1. Attendance – 75
2. Safety- 25
3. Work Ethic – 100
4. Class Work – 115 (extra credit, additional assignments possible.)
5. NCCER Modules – 200 Trade Terms, Quizzes
6. Welding Position Completed- 100

Grading is on an individual basis, not a class curve.

PERCENTAGE	LETTER GRADE
90% to 100%	A
80% to 89%	B
70% to 79%	C
60% to 69%	D
59% & Below	F

Attendance

WLD 121 meets on Monday through Thursday from 7:30AM to 12:30PM. Attendance will determine your final grade. Students are expected to attend every class. Students are responsible for all work and assignments missed due to an absence. Missed quizzes and exams cannot be made up. Students with three (3) or more unexcused absences will be dropped from the class. Sign the Sign-In Sheet **before** the start time of each class, otherwise you **WILL NOT** receive credit **for attendance that day**.

1. Each class is worth 5 points. If you are 5 minutes late you will receive 2 points. 10 minutes late will receive 1 point. 15 minutes late you will be told to leave. ***This will be considered an unexcused absence.***

LATE WORK AND/OR LATE ASSIGNMENT POLICY

Students are responsible for all missed assignments. All assignments have due dates. Some work & activities will not be accepted late; this will be specified at the time of the assignment. If late work or late assignments are accepted it is at the discretion of instructor. If accepted late; it will be accepted with the following late penalty:

- The 1st class day following an assignment's due date: maximum late penalty of 25%.
- The 2nd class day following an assignment's due date: maximum late penalty of 50%.

No work will be accepted after the 2nd class day unless special arrangements have been made.

Students who arrive late to class will not receive credit for class and/or lecture. Instructor will not review missed instructions.

Quizzes/Final Exams

Quizzes will be given on blackboard, or at the beginning of each class following a reading assignment. Students will be required to score a minimum of 85% on all quizzes. Students will be given up to 3 attempts per quiz. Quiz grade will be reduced 25% on 2nd attempt. 50% for 3rd attempt. **No make-up of missed quizzes. No make-up of the final exam.**

WITHDRAW FROM CLASS [CAC Policy]

After the first week of the semester and through the 10th week of the semester, a student may withdraw from a class he or she no longer wants to attend; he or she will receive a grade of W on his or her transcript. He or she will meet with an advisor who will provide a withdrawal form that must be taken to the instructor for signature before submission to the Records and Registration Office for processing. After the 10th week of the semester, a student must meet with the instructor to initiate a course withdrawal. The instructor will indicate that the withdrawal is either WP (Withdraw Passing) or WF (Withdraw Failing) for the course. Students must initiate a withdrawal prior to final exam week. Once final exam week has begun, students may no longer withdraw from a class and will receive their earned grade. It is your responsibility to make sure you have read the most current CAC policy.

Reasonable Accommodations [CAC Policy]

Reasonable Disability Accommodations: Central Arizona College seeks to provide reasonable accommodations for all qualified individuals with disabilities. The College will comply with all applicable federal, state and local laws, regulations, and guidelines with respect to providing reasonable accommodations as required to provide an equal educational opportunity. It is the student's responsibility to register with the Disability Resource Service Office and discuss their specific needs with the Disability Resource Service Coordinator to determine reasonable accommodations. Once the student registers with the Disability Resource Service Office and provides documentation identifying the need for accommodations, an Accommodation Plan will be provided to the student. It is the student's responsibility to show the Accommodation Plan to their instructor. The Disability Resource Service Office is located in the M building at the Signal Peak Campus. Students may contact the Disability Resource Service Coordinator at 520.494.5409 to set up a one on one meeting. The Disability Resource Service Coordinator travels to all campuses and centers. All information is kept confidential.

Plagiarism [CAC Policy]

CAC recognizes the seriousness of plagiarism, which is defined as turning in someone else's work and calling it your own. At CAC plagiarism is treated as a dishonest action, an issue of dishonorable behavior. There are two types of plagiarism to beware of--intentional and unintentional plagiarism.

Intentional plagiarism is an obvious type of cheating that includes turning in writing that you are falsely presenting as your own. It may be writing that was produced by a roommate, a spouse, an essay bought from the Internet, and passages copied from a research source such as a book, magazine, or web site. Allowing another student to copy your work is another type of intentional plagiarism.

In addition, students are expected to avoid unintentional plagiarism, which means including in your own work and passing off as your own writing, phrases, sentences, paragraphs, or more, that are only slightly changed from the original source. To avoid unintentional plagiarism, you must paraphrase properly and identify the original writer and source; this is called citing your work. Citations can be done in a few different formats, and your instructors are eager to help you learn how to cite your sources correctly. Unintentional plagiarism can also include passing off somebody else's ideas (not just words) as your own without indicating that the idea or information came from somewhere else. Finally, unintentional plagiarism also can be allowing someone else to make significant wording alterations or editing changes to your writing.

Penalties for plagiarism, according to CAC's Violations of the Student Code of Conduct, can be severe. They may range from failure of an assignment to failure of a course, to referral to the Dean, to dismissal from a program of study. These actions are not meant to be threatening, but to ensure that students understand that the school takes plagiarism seriously. The underlying message of the CAC plagiarism policy is that instructors are committed to encouraging student writers to use source material correctly and develop the confidence to express themselves in their own unique ways. As a minimum; Academic Dishonesty will result in removal from class with a Withdraw Failing (WF) grade.

CBE Course Outline

Semester 1

CBE Module 1

WLD 121 SMAW 1 Required Textbook: NCCER Welding Level One 5th Edition, AWS SENSE Level One Safety Module.

Module Assessment-

- AWS SENSE Level 1. NCCER Welding Level One Modules 1-4,7-9

Competencies-

AWS SENSE Level 1 Safety Module- read safety section and complete test with 100% score as required by AWS standards. (MSLO 1) • https://app.aws.org/technical/AWS_Z49.pdf
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- NCCER Safety Module 1- Read pages 1-45. Score 80% on test. (MSLO 1)
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- Complete Performance Evaluation on pages 58,59,60 (MSLO 4,5,6,7)
- NCCER SMAW Equipment Set-up Module 7- Read pages 1-31 Score 80% on test. (MSLO 2)
- Complete Performance Evaluation on basic SMAW set up in the DCEP, DCEN modes. (MSLO 4)
- NCCER Plasma Arc Cutting. Module 3- Read pages 1-32. Score 80% on test.(MSLO2)
- Complete performance Evaluation on page 27,28 (MSLO 4,5,6)
- NCCER SMAW Electrodes Module 8- Read pages 1-23 Score 80% on test. (MSLO 2)
- NCCER SMAW Beads and Fillets Module 9- Read pages 1-34 Score 80% on test. (MSLO 2)
- Complete Performance Evaluation on striking an arc, arc re-starts, and arc terminations.
- Complete Performance Evaluation on page 38,43 1F-2F using E7018 electrodes. (MSLO 4,5,6,7)
- Complete Performance Evaluation on page 37,39,41,43 1F-4F using E6010 electrodes.
(MSLO 4,5,6,7)
- Performance evaluation shall be acceptable to industry codes, and performed by an AWS CWI/QC-1. (MSLO 4,5,6,7)
- Complete Performance Evaluation on Page 35,36. Flat and Horizontal overlap. (MSLO 4,5,6,7)
- NCCER Air Carbon Arc Gouging. Module 4- Read pages 1-22. Score 85% on test. (MSLO 2)
- Complete Performance Evaluation on Page 22

CBE Module 2

WLD 122

SMAW II

Required Textbook: NCCER Welding Level 1,2

Module Assessment-

- NCCER Welding Level 1 Mod. 5,6,9, NCCER Welding Level 2 Mod. 1-2

Competencies-

- NCCER Welding Symbols Module 1 Level 2- Read pages 1-34. Score 80% on test. (MSLO 2,5)
- NCCER Base Metal Preparation Module 5 Level 1-Read pages 1-27. Score 80% on test. (MSLO 2)
- NCCER Reading Welding Detail Drawings Module 2 Level 2-Read pages 1-26. Score 80% on test. (MSLO 2)
- NCCER Weld Quality. Module 6 Level 1- Read pages 1-48. Score 80% on test. (MSLO 2,3,7)
- Complete Performance Evaluation on performing visual weld inspection using weld gauges.
- NCCER SMAW Beads and Fillets Module 9 Level 1-Read pages 21-30. Score 85% on test.(MSLO 2)
- Complete Performance Evaluation on E6010,E7018 Arc restarts, and Arc terminations. (MSLO 4,5,6,7)
- Complete Performance Evaluation on E7018. 3F,4F per pages 37,39 (MSLO 4,5,6,7)
- Complete Performance Evaluation on Laps and Fillets per AWS D1.1 Structural Code. 1F-4F

CBE Module 3

WLD 222 GMAW Required Textbook: NCCER Welding Level 1,2

Module Assessment-

- NCCER Welding Level 1 Module 10. NCCER Welding Level 2 Modules 4,5,6

Competencies-

- NCCER Preheat and Post heat treatment of weldments. Module 4- Read pages 1-20. Score 80% on test. (MSLO 2)
- Complete Performance Evaluation on making a chisel.
- NCCER Joint Fit-up and Alignment Module 10- Read pages 1-29. Score 80% on test. (MSLO 2)
- Complete Performance Evaluation on joint fit up tolerances.
- Complete Performance Evaluation on basic fabrication techniques.
- NCCER GMAW Equipment and set-up. Module 5- Read pages 1-55. Score 80% on test. (MSLO 2,4)
- NCCER GMAW Plate. Module 6- Read pages 1-43. Score 80% on test. (MSLO 2)
- Complete Performance Evaluation ER70S flat and horizontal overlap. (MSLO 4,5,6,7)
- Complete Performance Evaluation ER70S 1F, 2F per pages 35, 36. (MSLO 4,5,6,7)
- Complete Performance Evaluation ER70S 3F,4F per pages 37,38 (MSLO 4,5,6,7)
- Complete Performance Evaluation ER70S 2G, 3G Open Root per pages 40,41
- Complete Performance Evaluation ER70S 1G Spray Transfer mode.

CBE Module 4

WLD 225

SMAW III

Required Textbook: NCCER Welding Level 1,2

Module Assessment-

- NCCER Welding Level 1 Modules 11,12. NCCER Welding Level 2 Modules 3-4

Competencies-

- NCCER SMAW Groove Welds with Backing. Module 11- Read pages 1-21. Score 80% on test. (MSLO 2)
- Complete Performance Evaluation E7018 1G,2G per pages 23,24 (MSLO 2,4,5,6,7)
- Complete Performance Evaluation E7018 3G per page 25 (MSLO 2,4,5,6,7)
- Complete Performance Evaluation E7018 4G per page 26 (MSLO 2,4,5,6,7)
- NCCER Physical and Mechanical Properties of Metals Module 3 Level 2 Read pages 1-62. Score 80% on test. (MSLO 2)
- NCCER SMAW Open Root Groove. Module 12- Read pages 1-20. Score 80% on test. (MSLO2)
*Extra Credit- Code acceptable bend test in 3G,4G before eligible.
- *Complete Performance Evaluation E6010 root, E7018 Fill and Cap 1G,2G per pages 21,22 (MSLO 4,5,6,7)
- *Complete Performance Evaluation E6010 root, E7018 Fill and Cap 3G,4G per pages 23,24. (MSLO 4,5,6,7)

CBE Course Outline

Semester 2

Students who successfully complete Block One of the Structural Steel/Mining sequence can choose from the following pathways.

Block Two

WLD 124 Flux Cored Arc Welding I

WLD 224 Flux Cored Arc Welding II

WLD 227 Welding Design and Fabrication

WLD 120 Thermal Cutting Processes

Pipe Welding*

WLD 125 Pipe Welding 1

WLD 135 Pipe Welding 2

WLD 245 Pipe Welding 3

WLD 255 Pipe Welding 4

*Students required to pass 3G & 4G Plate for Pipe class eligibility.

All certificate courses transfer toward an A.A.S. in Welding Technology. See your advisor or myself for any questions.

- This tool was created in order to fulfill the requirements of the TAACCCT 4 grant. AZ Ramp Up products by Central Arizona College are licensed under a Creative Commons Attribution 4.0 International License. This workforce product was funded by a grant awarded by the U.S. Department of Labor’s Employment and Training Administration. The product was created by the grantee and does not necessarily reflect the official position of the U.S. Department of Labor. The U.S. Department of Labor makes no guarantees, warranties, or assurances of any kind, express or implied, with respect to such information, including any information on linked sites and including, but not limited to, accuracy of the information or its completeness, timeliness, usefulness, adequacy, continued availability, or ownership.

