



WEL 226	Flux Core Arc Welding	3 credits
Fall 2015	M, W F	2:00-3:30 p.m. 2:00-3:00 p.m.

Micah Elefson, Instructor
Email: elefson@swcciaowa.edu
Phone: 641-782-1312
Office: Rm 133
Class: Rm 202
Lab: Rm 138

Catalog Description

Flux Core Arc Welding (3.0) Credits

This course provides a thorough technical understanding of the flux core arc welding process adjustment and operation of the power source, types of arc shielding and safe operating procedures. Quality welds are produced on 3/8" to 1" carbon steel in all positions. (1, 4)

Purpose of the Course/Course Rationale

If you are going to weld in the outdoors using the Gas Metal Arc Welding process then flux core wire is the answer to shielding gas problems with this process. The FCAW process is a semi-automatic process that produces much higher deposition rates than Shielded Metal Arc Welding. This process can be used with engine driven welders, making it a portable process that can be used in the shop or in the field. Selecting the correct polarity and the proper shielding gas, (if needed) and the wire classification for the base metal, is critical.

Materials

Textbook: Welding by David J. Hoffman, Kevin R. Dahle and David J. Fisher.
DVDs and Power Point presentations will be provided

Student Equipment

Student must provide:

Clothing: No clothing should be made from a synthetic material such as polyester, nylon, etc. as it can melt and stick to the skin as it burns (Kevlar is one of the few exceptions). Leather, Wool and FR (Flame Resistant) Cotton are approved materials. Cotton t-shirts and Denim pants (without cuffs) are also acceptable. Boots should be full leather (no synthetic panels) and cover at least the ankle if not a little higher. Boots

are highly recommended to be steel toe or “safety toe” (if you can get a pair that have the meta-tarsal protector as well, that’s even better).

- 1) A Welding Helmet either an Auto-Darkening (variable shade 9-13) or a Passive/Fixed Shade (Should have both a shade 10 and a shade 12 lens)
- 2) A Welding Jacket made from Leather, FR Cotton or a Hybrid (Leather sleeves & FR Cotton torso)
- 3) Welding Cap made of FR cotton or leather
- 4) Leather Gauntlet Style Welding Gloves
- 5) Leather “Drivers” gloves (example: Tillman 1414 or 1464) or other FR material used for handling sharp sheet metal and plate metal.
- 6) Clear Safety Glasses (Must be stamped ANSI Z87.1 or Z87+) or Prescription Safety Glasses (May either be stamped ANSI Z87-2+ or ANSI Z87+)
- 7) Either Shaded Safety Glasses, need both Shade 3 & Shade 5, or Goggles, need both Shade 3 & Shade 5 lenses (Must meet ANSI Z87.1)
- 8) Hearing Protection: Either Earplugs or Ear Muffs (should have Noise Reduction Rating, NRR, of at least 25dB)
- 9) Welding Pliers
- 10) Tape Measure (anything between 20’ & 30’ should be fine)
- 11) A 12” Combination Square and recommend getting a 7” Speed Square as well.

In addition this Flux Core Arc Welding Class also requires:

- 1) An Aluminized Back Hand Pad (for example: Tillman 554)

Learner Outcome:

After completing this course the student will be able to:

- Apply safety precautions that must be taken when flux core arc welding. (IS-D)
- Demonstrate how to set up, select the proper wire classification, polarity and machine settings for the welding job. (CT-A)
- Identify problems and trouble shoot any problems that occur with the weld or with the welding machine and correct them. (CT-A, IS-A)
- Apply the knowledge and skills learned to perform welds on the five basic weld fit-ups in all four welding positions, on thickness from 18 gage to 1 inch. (IS-A)

Grading Criteria

Quizzes	20% of total grade
Exams	30% of total grade
Lab Performance	50% of total grade

Grade Scale

100-90	A
89-80	B
79-70	C
69-60	D
59 and below	F

Late Assignments

All late assignments including labs must be made up within two days of the student's return. The student is responsible to check to see what they need to make up.

Makeup Tests

Must be made up within two days of the student's return. The student is responsible to check and see what tests might need to be made up.

Class Expectations

- ☐ As you are training to be professionals, your conduct is very important. People's perception of you can mean everything in a competitive job market. Exercising respect, courtesy, manors and professionalism will be expected in this program. In other words, treat one another the same way that you would like to be treated.
- ☐ I will strive to treat students with civility and respect. Civility in the classroom is expected of all members of the class. Anyone who disrupts class to the extent that other's educational opportunities are diminished may be asked to leave the classroom.
- ☐ Participation
This is a course or career that you have chosen, so it is up to you to get everything from this program that you possibly can. If you don't participate, you are letting yourself down. Set your standards high and remember, this is for you.
- ☐ Attendance is extremely important because you can easily get behind making it hard to catch back up. It is also a measure of how reliable you would be on a job and one of the biggest reasons for being terminated from a job.
- ☐ If for some reason you happen to be gone, or unable to attend class, please contact me at telephone number 641-782-1312 and please leave a message or e-mail me at elefson@swcciaowa.edu. Check with the instructor for makeup work and tests. Make up work and tests must be completed within two days of your return.
- ☐ Plagiarism will not be allowed. Make sure that you give the proper credit or acknowledgement of materials that is not your own.

Class schedules are subject to change, any changes made will be announced in advance.

<i>Course Name</i>	<i>Number</i>	<i>Sec</i>	<i>Class Time</i>	<i>Instructor</i>	<i>Cred</i>	<i>Room</i>	<i>Notes</i>
Sheet Metal Welding	CRR 101	01	MTWThF 7:30-9:55	Elefson	2	1TC138	Aug 26 – Sep 25
Welding for Automotive Mechanics	AUT 140	01 02	MTWThF 7:30-9:55 MW 1-3 TThF 1:30-3:30	Elefson	2	1TC201	Sep 30 – Oct 30 Nov 9 – Dec 18
Welding Blueprint Reading	WEL 111	01	MWF 10-11	Elefson	3	1TC201	
Introduction to Fabrication	WEL 114	01	TTh 10-12	Elefson	3	1TC201	
Intro to Oxyacetylene Welding, Cutting & Brazing	WEL 139	01	MW 11-12:30 F 11-12	Elefson	3	1TC201	
Intro to Shielded Metal Arc Welding (SMAW)	WEL 162	01	MTWThF 7:50-10	Elefson	3	1TC201	Nov 9 – Dec 18
Flux Core Arc Welding	WEL 226	01	MW 2-3:30 F 2-3	Elefson	3	1TC201	
Advanced Gas Tungsten Arc Welding	WEL 231	01	TTh 1:30-3 F 1-2	Elefson	3	1TC201	

Syllabus Standard Policy Statements

Academic Integrity Policy

Academic freedom is a fundamental right in any institution of higher learning. Honesty and integrity are necessary preconditions of this freedom. Academic integrity requires that all academic work be wholly the product of an identified individual or individuals. Joint efforts are legitimate only when the assistance of others is explicitly acknowledged. Ethical conduct is the obligation of every member of the college community, and breaches of academic integrity constitute serious offenses. Refer to this section of the Student Handbook for further details.

Plagiarism

Plagiarism is the representation of the words or ideas of another as one's own in any academic exercise. To avoid plagiarism, every direct quotation must be identified by quotation marks or by appropriate indentation and must be properly cited in the text or in a footnote or in a bibliography or works cited page. Acknowledgment is required when material from another source stored in print, electronic or other medium is paraphrased or summarized in whole or in part in one's own words. Refer to Student Handbook for examples of plagiarism.

Temporary Closing Policy

Every effort will be made to keep the college open. However, should inclement weather or other emergencies necessitate closing the college or delaying the start of classes,

the decision will be made between 5:00-5:30 a.m. and will be announced on the following:

(This information is also posted on Southwestern's website www.swccia.edu)

Radio Stations

KSIB-KITR	Creston	AM 1520 FM 101.3
KOAK/KCSI	Red Oak	AM 1080 FM 95.3
KMA	Shenandoah	AM 960 FM 99.1
WHO	Des Moines	AM 1040 FM 100.3 FM 107.5
KJAN	Atlantic	AM 1220
KSOM	Atlantic	FM 96.5 and 95.7
KSOI	Murray	FM 91.9

Television Stations

KCCI-TV8	Des Moines
WHO-TV13	Des Moines
WOI-TV5	Ames/Des Moines
KMTV-TV3	Omaha
WOWT-TV6	Omaha
KETV-TV7	Omaha

2-Hour Late Start Information

When inclement weather causes the college to have a two-hour delay, the following procedures will be followed: If the two-hour delay occurs on a Monday, Wednesday or Friday, then classes will start at 9:40 a.m. (7:30 a.m. and 8:35 a.m. classes will not meet). Offices will open at 9:00 a.m. If the two-hour delay occurs on a Tuesday or Thursday, then classes will start at 9:00 a.m. (7:30 a.m. classes will not meet). Offices will open at 9:00 a.m. Career and Technical courses do not follow the same 1 hr./1 ½ hr. schedule. Please refer to your instructor for more details. Nursing 4 hr. class will start at designated late start time (9:40 a.m. or 9:00 a.m.). The college also utilizes text messaging through e2campus™ as another means to notify students, faculty and staff of important announcements. Please refer to the student handbook for information about this service.

Cell Phone Policy

The college believes in providing an environment conducive to learning. For this reason, cellular phone use should be kept to a minimum on campus and conducted in appropriate locations only. Cell phone users should be respectful of others.

1. Students are to turn cell phones off or to silent mode upon entering any classroom, computer lab, library or auditorium.
2. If necessary, students may conduct short, quiet cellular phone conversations in the hallways, away from doorways or outside of the buildings.
3. Cellular phones with picture taking capabilities are not allowed in locker rooms or weight rooms.
4. Faculty members have the right to limit the use of cell phones with picture taking and text messaging capabilities in their classrooms.

5. Students who fail to comply with the above regulations will be referred to the Dean of Student Services and will be considered in violation of the student code of conduct.

Children on Campus Policy

The college strives to maintain a quality learning environment and has established the following guidelines regarding children on campus.

1. Students will not be allowed to bring children with them in the instructional setting which includes, but is not limited to, the classroom, library, student center, etc.
2. When children are present on campus, they must be under the direct supervision of a parent, legal guardian, registered student or other authorized adult.
3. This policy does not intend to conflict with Southwestern's programs designed for the involvement of children. For example: 8th grade career day, youth-camps, business contests, vocational open house, etc.
4. Students who fail to comply with the above regulations will be referred to the Dean of Student Services and will be considered in violation of the student code of conduct.

Sexual Harassment/Sexual Offense/Sexual Violence

Sexual harassment is a violation of Title IX in that it constitutes differential treatment on the basis of sex (including sexual harassment, sexual violence, sexual misconduct, domestic violence, dating violence, or stalking). Title IX applies to any educational program or activity and protects both students and employees.

Southwestern Community College will not tolerate the commission of sexual offenses by or against students, faculty, and/or staff on or at any College campus, centers, facilities and/or activities. It is the policy at the College to provide education to help prevent sexual offenses, facilitate the reporting of and provide information on counseling concerning sexual offenses, and, when appropriate, investigate and take disciplinary actions regarding sexual offenses.

Students may refer to the College's Student Handbook on the college's website at <http://www.swcciaowa.edu/student-life/student-handbook>, for additional information regarding sexual offenses.

Any person who believes he/she has been subjected to sexual harassment, sexual violence, sexual misconduct, domestic violence, dating violence, or stalking may report the behavior to Jolene Griffith, Educational Equity (or Title IX) Coordinator, 641.782.1456 or 800.247.4023, ext. 456. *Reports may be filed by the alleged victim or others on their behalf. Anonymous reports will be accepted, however, options available to college authorities for investigating or resolving anonymous reports may be limited because of the unique challenges presented.*

Nondiscrimination Statement

Southwestern Community College prohibits discrimination on the basis of race, color, national origin, sex, disability, age in employment, sexual orientation, gender identity, genetic information, creed, religion, veteran status, associational preference and actual or potential parental, family or marital status in its programs, activities or employment and personnel policies and practices. Southwestern also affirms its commitment to providing equal opportunities and equal access to its facilities. Inquiries regarding compliance with the nondiscrimination policy and the appropriate grievance procedure may be directed to: Educational Equity Coordinator, Southwestern Community College, 1501 W. Townline St., Creston, IA 50801, 641.782.1456 or 800.247.4023, ext. 456.

Accommodations

Southwestern is committed to the regulations of the American with Disabilities Act in making reasonable accommodations for students, staff, or patrons of the College in accessing its facilities. Any student with a disability wanting to request accommodations should notify the College administration of his/her needs, and the College will do what is reasonable to effect changes and assist the individual in being successful in the College environment. Steps for obtaining such accommodations are listed in the Student handbook (Disability/Special needs at Southwestern). For further assistance regarding accommodations or to identify special needs, students should contact Deb Pantini, Director of Student Development, Administration Center, at 641.782.1458.

Emergency Notification Policy Statement

SWCC has a campus-wide emergency notification system (e2Campus) to send instant text messages and/or e-mail messages to all students, faculty, and staff who have elected to receive them. This system will be utilized to immediately notify the campus community upon the confirmation of a significant emergency or dangerous situation involving an immediate threat to the health or safety of students or employees occurring on campus. This service also allows users to receive messages when classes are canceled and/or messages when the college is closed due to weather. With this system in place, SWCC can instantly and simultaneously distribute brief time-sensitive messages in emergency situations. Although there is not one system that is 100 percent guaranteed effective, this is an important method of communication. In order to alert students and employees that an emergency text has been sent, an Emergency Alert sound will be activated. This sound (as well as the tornado and fire alarm sounds) can be heard on the Emergency Notifications page on the SWCC Web site. If the **Emergency Alert sound** is activated on campus, students and staff should immediately check their text messages. Some carriers may charge for incoming text messages so keep this in mind should you decide to sign up. You may also sign up to receive the same messages via email with or without signing up your cell phone number. To sign up, students will need to log on to SWCC's Campus Connect system.

New students will receive training on Campus Connect at Success Seminar, The College Experience course, and orientation.

Class Attendance Related to School-Sponsored Activities

The college recognizes that many students participate in school-sponsored activities that may conflict with class meeting times. These school sponsored-activities (excluding practices) may include athletic competitions, student academic competitions and conferences, student musical performances, class sponsored field trips, etc. Students involved in such activities must give written notice to the instructor at least three days in advance of the anticipated absence. Students will be given the opportunity to independently make up course work or work of equal value for the day(s) the event was scheduled and to take a scheduled exam at an alternative time. School-sponsored absences shall not result in a reduction in attendance or participation grades. In the event of a last minute schedule change, the student must notify all affected faculty members immediately. A relevant last minute schedule change could be, but is not limited to, inclement weather causing an event to be rescheduled with less than three days advance notice.

General Education Statement

Southwestern Community College is an institution dedicated to continuous student improvement. As part of our general education assessment efforts, it is necessary for us to collect and analyze academic data. Data drawn from students' work for the purposes of institutional assessment will be collected and posted in aggregate, and will not identify individual students. Your continued support in our on-going effort to provide quality instructional services at Southwestern is appreciated.

Syllabus Disclaimer Statement

This syllabus is representative of materials that will be covered in this class; it is not a contract between the student and the institution. It is subject to change without notice. Any potential exceptions to stated policies and requirements will be addressed by the instructor on an individual basis, and only for reasons that meet specific requirements.

(7/7/15)

Class and Shop Rules:

1. Absolutely no fighting or name calling.
2. No cursing or foul language.
3. No horse play.
4. No smoking on campus or within 50 feet of campus property. Also no chewing tobacco on campus.
5. No obscene jokes or jokes or statements that could hurt someone's feelings.
6. No ethnic, racial, or gender persecution or discrimination will be tolerated.

Safety Rules in the Shop and Required Equipment

1. Safety glasses (They are required at all times in the shop.)
2. Leather gauntlet style welding gloves when welding or around hot metal. Otherwise all leather "driver's"/work gloves are to be used when handling metal.
3. Leather shoes (No canvas tennis shoes.)
4. Cotton or denim pant with no cuffs or frays (No shorts.)
5. Wear welding jackets when using a welding or cutting process (No polyester shirts or sweat shirts.)
6. Use pliers for handling hot metal
7. When grinding, use a face shield and hearing protection.
8. When brazing, cutting or welding with a torch, use a shade 5 face shield.
9. When welding with the following processes, SMAW, GMAW or GTAW, use a welding helmet with a minimum of a shade 9 lens. Shade 10 is recommended.
10. Do not use any shop equipment that you have not been trained on and make sure you ask permission first.
11. NO CELL PHONE USE IN THE LAB!!! If there are special circumstances please let me know and use your phone in the hallway or outside.

Signature _____ Date _____

FLUX CORE ARC WELDING

SAFETY COMPLIANCE POLICY

I have read and fully understand the safety instructions given to me by the Welding Instructor. I also have been given a copy of the General Safety Rules for the program, as well as the Specific Safety Rules for the tasks I will be performing. I fully understand the dangers of not following safety precautions and pledge to follow all safety rules and regulations.

I will wear safety glasses at all times in the lab and will wear necessary personal protection gear at the appropriate times.

I realize that I will not be allowed in the shop without safety glasses and personal protection and I will lose a lab grade for that day. I also understand that non-compliance of safety rules can lead to suspension or expulsion from the lab and possibly from the program. I have been given a copy of this document.

Student
Signature_____Date_____

Instructor
Signature_____Date_____