AGM 236
Welding and Metals

Name: Dr. Craig Morton

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Phone: (936) 468-4250

Office: Agricultural Mechanics Shop

Office Hours:

Monday
None

Tuesday
9:00 – 12:00

Wednesday
11:00 – 12:00
1:00-2:00
4:00 – 5:00

Thursday
None

Friday
9:00 – 12:00
1:00 – 2:00

Department: Agriculture

Class meeting time and place: Lecture – Thursday 11:00-11:50, room 110 of Ag Shop; Lab - Thursday 1:00-4:50, room 110 of Ag Shop

COURSE OBJECTIVE: To teach students a wide range of basic concepts, principles, applications, and skills in various welding, cutting, forming, heat treating, and testing processes for metals.
Program Learning Outcomes:

- Weld: SMAW plate
- Weld: SMAW pipe
- Weld: GMAW plate
- Weld: oxy-fuel
- Braze: oxy-fuel
- Cut: oxy-fuel
- Cut: plasma-arc
- Drill and tap
- Sharpen drills

Text and Materials:  
Welding For Modern Agriculture, Morton.
Other resources:
Modern Welding, Althouse, et al.
Modern Welding Technology, Cary
Welding Skills and Practices, Giachino
The Procedure Handbook of Arc Welding, The James F. Lincoln Arc Welding Foundation

Course Requirements:

- Three exams: 300 points
- Lab exercises: 300 points
- Attendance, punctuality, & clean-up: 100 points
- Total: 700 points
Course Calendar:

Lecture:
- Week 1 - Course introduction, shop standards and safety
- Week 2 - Welding and cutting processes
- Week 3 - Shielded metal arc welding (SMAW)
- Week 4 - Oxy-fuel cutting
- Week 5 – Exam 1
- Week 6 - Oxy-fuel welding
- Week 7 - Gas metal arc welding (GMAW)
- Week 8 - Gas tungsten arc welding (GTAW)
- Week 9 – OAW brazing and braze welding
- Week 10 – Exam 2
- Week 11 – Fasteners
- Week 12 - Cold metal work
- Week 13 - Plasma arc cutting (PAC)
- Week 14 - Special welding processes
- Week 15 - Weld testing
- Week 16 - Final Exam

Lab Skills:

SMAW:
- Pad, three layer
- Butt, flat (guided bend test required; counts as two skill exercises)
- Butt, horizontal
- Butt, vertical up
- Pipe tee

Oxy/fuel, fusion:
- Corner, outside
- Butt
- Lap

Oxy-fuel, brazing:
- Bead
- Butt
- Lap
Cutting:
- Straight cut & circle, oxy-acetylene
- Straight cut & circle, oxy-propane
- Straight cut, plasma-arc

GMAW:
- Butt, flat
- Butt, horizontal
- Butt, vertical

GTAW:
- Lap, aluminum (optional)
- Butt, stainless steel or carbon steel (optional)

Cold Metal:
- Jig layout, drill and tap exercise
- Sharpen twist drill

Hot Metal:
- Metal shaping exercise

Student Conduct:

- **Tobacco and Vape Free Campus:** The use of all tobacco and vape products (included but not limited to cigarettes, cigars, pipes, smokeless tobacco, e-cigarettes, vaporizers, vape pens, hookahs, blunts, pipes, snuff, and all other tobacco or vape related product) is prohibited on all property that is owned, leased, occupied, or controlled by SFASU. Believe it or not, this even applies to the agriculture shop.

- **Responsible Use of Technology:** It is expected that all students will only use cell phones, PDAs, laptop computers, MP3 players and other technology outside of class time or when appropriate in class. Answering a cell phone, texting, listening to music, or using a laptop computer for matters unrelated to the course may be grounds for dismissal from class or other penalties.
• **Classroom Behavior:** Disruptive, distracting, or disrespectful behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave class and may be subject to judicial, academic, or other penalties. The instructor shall have full discretion over what behavior is appropriate/inappropriate in the classroom.

• **Attendance Policy:** Students are expected to attend all classes and labs. Over 15% of the class grade is determined by attendance. A tardy is equal to an absence; if you miss roll call your attendance grade will suffer. If you arrive after roll call do not ask for attendance credit. Treat this class as you would treat a job – be where you are supposed to be when you are supposed to be there. Except for excused absences, exams and lab exercises cannot be made-up. Excused non-emergency absences must be coordinated in advance or they will be treated as unexcused. Make-up for emergency absences should be coordinated immediately upon return to class.

• **Academic Integrity (A-9.1):** Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty as well as abiding by university policy on penalties for cheating and plagiarism.

Definition of Academic Dishonesty - Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class; (2) the falsification or invention of any information, including citations, on an assigned exercise; and/or (3) helping or attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own.

Examples of plagiarism are (1) submitting an assignment as if it were one's own work when, in fact, it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained from an Internet source or another source; and (3) incorporating the words or ideas of an author into one's paper without giving the author due credit. You may read the complete policy at [www.sfasu.edu/policies/academic_integrity.asp](http://www.sfasu.edu/policies/academic_integrity.asp).
• **Withheld Grades Policy (A-54):** Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average.

• **Students with Disabilities:** To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to [http://www.sfasu.edu/disabilityservices/](http://www.sfasu.edu/disabilityservices/).
Program Learning Outcomes

1. The student will demonstrate competence of technical subject matter (Technical)
2. The student will exhibit problem solving skills. (Problem Solving)
3. The student will demonstrate effective communication skills. (Communication)
4. The student will exhibit leadership and other interpersonal skills needed for career placement and advancement. (Leadership)

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Proficiency Levels:
- B - Basic
- I - Intermediate
- A - Advanced
- M - Mastery