

MAG 41 Syllabus Introduction to Agricultural Welding

Summer 2021 – Code: 56032

Combo Lecture/Lab

Lecture: T, TH 8:00 – 9:50 am IND 19
Lab: T, TH 10:00 – 1:05 pm IND 19

Instructor: Andrew Mancini

Office Hours: T/Th (In Person)

Office: IND 22

7:00 – 7:50 am

Cell #: (559) 341-4657

1:05 – 2:30 pm

E-mail: andrew.mancini@reedleycollege.edu

Or

by appointment via email/Zoom

Course Description

3 Units

This course provides an introduction into the welding industry as it relates to agricultural mechanics. Instruction in the areas of safety, welding processes, equipment and the properties of metal will be covered.

Required Text/Materials: **(By second class meeting)**

- A. John Deere - Welding: The Fundamentals of welding..... 10th ed. (available at college bookstore)
- B. Approved eye protection/safety glasses (Z87.1 A.N.S.I.)
- C. Welding Hood With #10 Lenses
- D. Oxyacetylene goggles or glasses with #5 Lenses
- E. Welding Gloves

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- *Demonstrate the welding processes as they relate to the agricultural field*
- *Demonstrate the ability to properly and safely use an oxyacetylene apparatus to cut, weld and braze with.*

Course Objectives

- Be able to identify hazardous issues that pertain to the agricultural welding shop.
- Be able to properly set and adjust a SMAW welding machine.
- Be able to set and adjust a MIG welding machine.
- Be able to set and adjust a TIG welding machine.
- Be able to perform welds in the flat position using E6011 rod.
- Be able to perform welds in the flat position using E7018 rod.
- Be able to properly set up and shut down the oxyacetylene apparatus.
- Be able to properly demonstrate braze welding in the flat positions using the oxyacetylene apparatus.

- Be able to properly demonstrate fusion welding in the flat positions using the oxyacetylene apparatus.
- Be able to demonstrate the ability to clean and fit their welds.
- Be able to demonstrate the ability to maintain welding machines and equipment in the agricultural shop.

Course Outline

The instructor will determine the order in which the following will be presented and developed. It is also probable that several skills may be served by the same assignment.

Introduction to safety

- Protective equipment
- Ventilation
- Fire Protection
- Arc Welding
- Oxyacetylene welding

Joint design and Terms

- Design Factors
- Controlling Distortion
- Weld Defects

Oxyacetylene Welding and Cutting

- Equipment
- Set-up and operations
- Cutting Plate Steel
- Piercing Holes
- Power Cutting

Shielded Metal Arc Welding (SMAW)

- Machines and Accessories
- Selecting the Electrode
- Striking the Arc
- Running Continuous Beads
- Surfacing
- Welding positions

Gas Metal Arc Welding (GMAW)

- Machines and Accessories
- Set-up and operation
- Running Beads

Gas Tungsten Arc Welding (GTAW)

- Machines and Accessories
- Set-up and operation
- Running Beads

Properties of Metal

- Ferrous and Non Ferrous Metals
- Iron and Steel
- Alloy Metals
- Identification of Metals

LABS:

(Instructor will determine the order and number of days to spend on each section based on performance of the class)

Arc welding Labs

1. LAB #1: E6011 – Pad
2. LAB #2: E6011 – Flat/Horizontal Joints
3. LAB #3: E6011– Vertical Joints
4. LAB #4: E7018 – Pad
5. LAB #5: E7018 – Flat/Horizontal Joints
6. LAB #6: E7018 – Vertical Joints

Oxyacetylene Welding/Cutting & Plasma Cutting

1. LAB #1: Flat Beads with and without rod
2. LAB #2: Flat/Horizontal Joints
3. LAB #3: Cut Straight and Beveled Lines, Pierce/Cut Round and Square holes
4. LAB #4: Plasma Cut Straight Lines on Various Metals

MIG Welding

1. LAB #1: MIG – Flat Pad
2. LAB #2: MIG – Flat/Horizontal Joints

TIG Welding (all in the flat position)

1. LAB #1: TIG – Beads with and without filler rod, Various Metals
2. LAB #2: TIG – Flat/Horizontal Joints, Various Metals

Attendance

Lecture: Attendance is required, and roll will be taken at each class meeting. A “tardy” is considered an absence unless the student contacts the instructor at the end of class to change the status from absent to tardy. Two tardies will count as one absence. Any student who misses more than two weeks of class meetings within the first 4 weeks of instruction will be dropped from the class by the instructor (i.e., class meets two times per week, you are allowed 4 absences), with the exception given to extenuating circumstances (please be diligent about informing the instructor as to the reason for your absence).

Lab: **Attendance in all labs is mandatory.** Students must make prior arrangements with the instructor to be excused from lab. At that time, the instructor will determine if any make-up work will be appropriate.

Homework/Quizzes: Short, 5-10 minute, quizzes will be given weekly during lecture as the Instructor sees fit, and will cover topics discussed during the previous weeks lecture or lab. There will be no make-ups for quizzes. The purpose of this is to encourage lecture attendance, as well as to promote student attentiveness during class time. However, because life has a tendency to throw the occasional curveball, I realize that you may miss a lecture due to circumstances that are out of your control, and will therefore drop your lowest quiz score from your final grade. Homework will be assigned based on the topics being discussed in class and will directly correlate with the information on the midterms/final exam. As with the quizzes, your lowest homework score will be dropped from your final grade.

Tests: Make-up tests are limited to students who have made arrangements with the instructor prior to the required testing period. There will be one midterm around the end of week 4 and a final exam on the last day of class. **There will be no make-up for the final exam except for emergencies only!!!** Failing to study for the exam does not constitute an emergency...

Extra Credit: In the real-world work environment, there are rarely opportunities for “Extra Credit”, therefore, do not expect there to be “Extra Credit” assignments available simply because you did poorly on an assignment or exam. There **may** be opportunities for extra credit questions on exams or homework assignments, or possibly an extra credit assignment in the lab, but these will be given only as I see fit. **Do not ask for extra credit assignments!!!** Rather, put in the effort to do the assigned work correctly and on time, and study for the exams, so that no extra credit is needed.

Time Clock: All students are required to punch in and out of shop class on a daily basis. Failure to do so will result in an absence. Students are expected to only punch their own cards and cannot, under any circumstances, punch another student’s card. Misuse of the time clock system can result in removal from the class. Your time card will be scored weekly and count towards your “Participation Grade” in the class

Canceled Class: In the event that I must cancel class due to illness/emergency, I will send an email to the class as soon as I am aware of said situation. Check your email regularly before coming to class to make sure you are up to date on any announcements I may send out. I will also notify the school if such an event should occur, so that they can post it on the campus website as well as place a notice on the classroom door. I will **never** cancel class simply because I *really, really, really* want to go see (Insert Famous Artist) in concert, therefore I would hope that you would not ditch my class to go to said concert either.

Grading Policy/Scales/Evaluation Criteria

For maximum point consideration, all written assignments and term reports should be typed and double-spaced. Lecture assignments (homework) will be accepted late up to the test for that unit of the course; however, late assignments will be penalized 20% of the possible points.

***Final exam is mandatory. Failure to participate will result in a non-passing grade.**

Point Distribution: 90% = A, 80% = B, 70% = C, 60% = D, 59% & less = F

<u>Assignments & Grades:</u>	Homework/Quizzes	10%
	Midterm	10%
	Final Exam	20%
	Lab Assignments	50%
	<u>Participation</u>	<u>10%</u>
	Total =	100%

All assignments will be graded and returned during the next class meeting after they are due. All grades will be updated regularly on **Canvas**. It is the student's responsibility to check Canvas regularly for accuracy and report any discrepancies to the Instructor immediately via email with visual proof of the error.

Cheating & Plagiarism

In keeping with the philosophy that students are entitled to the best education available, and in compliance with Board Policy 5410, each student is expected to exert an entirely honest effort toward attaining an education. Violations of this policy will result in disqualification for the course.

Accommodations for Students with Disabilities

If you have a verified need for an academic accommodation or materials in alternate media (i.e., Braille, large print, electronic text, etc.) per the Americans with Disabilities Act (ADA) or Section 504 of the Rehabilitation Act, please contact the instructor as soon as possible.

Work Ethic - Most students are enrolled in college classes to obtain a quality job or to enhance their skills for advancement with their current employment situation. Employers look for a punctual, responsible individual who is prepared to go to work. Our goal is to replicate the workplace environment where a student can develop and demonstrate these desirable traits.

- Punctual: It is customary to arrive at least 5 minutes before work begins. Individuals will be terminated if they are not punctual. *To be early, is to be on time; to be on time, is to be late; and to be late, is to be irresponsible.*
- Responsible: It is expected that an employee works every scheduled work day. Individuals will be terminated if they are not responsible.
- Prepared: It is expected that an employee be prepared when he/she arrives for work. Students must have work shirts, long pants, safety glasses, and appropriate footwear to participate in the laboratory. If a student is not prepared, he/she cannot participate and will receive a zero (see "responsible").

Behavioral Standards

- Each student is responsible for his/her own work. Written assignments are not group assignments and no credit will be awarded for students who turn in the same work. Students suspected of cheating will receive no credit for that particular assignment and may be removed from the class.
- Turn **off** cell phones when in the classroom or shop. **Texting** is not allowed in class.
- Sleeping is **not** allowed in class. If you cannot stay awake you should go home and get some sleep, or try going to bed at an earlier hour.
- Reedley College is a tobacco free campus. Smoking, chewing, and vaping are all prohibited on campus.
- This class is set for the semester. All doctor's appointments, interviews, meetings with counselor, and other types of appointments should be scheduled during your time outside of class.

Important Dates

- First Day of Class June 15
- Independence Day Holiday (Observed) – No Classes Held July 5
- Last Day of Class – All Assignments Due August 5

FINAL EXAM:	Thursday, August 5, 2021 @ 8 – 9:50 am (Lab makeup to follow exam)
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