**WELD 341 Syllabus**

**Welding Essentials**

**Combo Lecture/Lab Lecture: M, W 3:00 – 3:50 pm IND 17**

**Lab: M, W 4:00 – 5:15 pm IND 19**

**Instructors: Robert Fransen** **Office Hours:** **M W** **= 2:00 – 3:00 pm**

Office: IND 22 **Th Fri** **=** call or email for appointment

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**Course Description** 0 Units

This course provides an introduction into the welding industry in the areas of safety, welding processes, equipment and the properties of metal will be covered.

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

1. John Deere - Welding: The Fundamentals of Welding. 10th ed. (free on Canvas or purchase at bookstore)
2. Clear safety glasses (Z87.1 A.N.S.I.)
3. Welding Hood With #10 Lens w/extra clear cover lenses (conventional or auto-darkening okay)
4. Oxyacetylene goggles or face shield with #5 Lens
5. Welding Gloves preferably 2 pair (1 light and 1 heavy)

D. Tip cleaner for Oxy fuel torch tip

G. Soap stone or silver pencil for marking on metal

H. Vice grips for carrying hot metal

I. Wire cutters for cutting MIG wire

J. Chipping hammer and Wire brush for cleaning welds

**Student Learning Outcomes**

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

* *Demonstrate the welding processes as they relate to the welding industry*
* *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 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 an industrial 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

Cutting Operations

* + Cutting Plate Steel
  + Piercing Holes
  + Power Cutting
  + Plasma cutting

Gas Metal Arc Welding (GMAW)

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

Shielded Metal Arc Welding (SMAW)

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

Oxyacetylene Welding

* + Equipment
  + Set-up and operations
  + Fusion welding mild steel

Gas Tungsten Arc Welding (GTAW)

* + Machines and Accessories
  + Set-up and operation

Properties of Metal

* + Ferrous and Non Ferrous Metals
  + Iron and Steel
  + Identification of Metals

**LABS:**

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

Week 1: Introduction and Shop tour,

Safety, Light torches

Week 2: Holiday (Monday)

Oxyfuel cutting

Week 3: Plasma cutting

Cutting practice

Week 4: Introduction to MIG

Cutting objectives completed

Week 5: MIG Beads and Pads

MIG Practice

Week 6: MIG Joint assembly

MIG Practice

Week 7: Holiday (Monday)

MIG Practice

Week 8: Introduction to SMAW (stick welding)

Beads and Pads 7018

Week 9: SMAW joint assembly E7018

Week 10: SMAW Beads and Pad E 6011

Week 11: SMAW Joint assembly E 6011

Week 12: SMAW - finish up all objectives

SPRING BREAK

Week 13: Introduction to Oxyfuel Welding (OFW)

Puddles, corners and beads

Week 14: OFW

Joint assembly

Week 15: OFW and other Objectives

Week 16: Introduction to TIG

Week 17: Finish all assignments

**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 9 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. The instructor will determine if any make-up work will be appropriate.

Homework/Quizzes: Short, 5-minute, “Pop” quizzes will be held randomly during lecture as the Instructor sees fit, and will generally cover topics discussed during the previous lecture or lab. Therefore, 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 do 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.

**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

Assignments & Grades: Homework/Quizzes 10%

Midterm 10%

Final Exam 20%

Lab Assignments 50%

Participation 10%

**Total = 100%**

All assignments will be graded and returned during the next class meeting after they are due. Lab scores will be posted in the welding shop weekly. It is the student’s responsibility to check grades regularly for accuracy and report any discrepancies to the Instructor immediately.

**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.
* Responsible: It is expected than an employee work 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 caught 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 January 9 (M)
* Holiday - Martin Luther King January 16 (M)
* Last day to drop and qualify for a refund January 20 (F)
* Last Day to drop class and not have a record on transcript January 29 (Su)
* Holiday – Lincoln & Washington B-day February 17, 20(F, M)
* Last Day to drop class with a “W” grade assigned after this date March 10 (F)
* Spring Break April 3 - 7 (M-F)
* Finals Week May 15 – 19 (M-F)

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| **FINAL EXAM: Monday, May 15, 2023 @ 3:00 – 5:00 pm**    **\*Final exam is mandatory. Failure to participate will result in a non-passing grade.** |