



## MFGT 52 Syllabus Manufacturing Fabrication

Spring 2023 – Code: 55082

Combo Lecture/Lab

Lecture: TH 7:00a – 9:50a CTL 1  
Lab: TH 10:00a – 12:50 pm IND 19

Instructors: Andrew Mancini

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Office Hours: M-W: 6:30 – 7am, 3 – 4 pm

F: By appt only via Zoom

(email to schedule appt.)

**Basic Skills Advisories:**

Eligibility for English 1A/1AH & Math 45

**Prerequisites:** MFGT 11 or 60

### Course Description

4 Units

This course will provide advanced instructions on metal fabrication. The focus will be in the areas of welding techniques, project planning, sketches/working drawings, material selection, project layout, cutting, fitting, tacking, squaring, and finishing of student projects.

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

- A. Welding Skills 3<sup>rd</sup> edition – B.J. Moniz & R.T. Miller ISBN: 978-0-8269-3010-1
- 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
- F. Welding Jacket/Long Sleeves, Long pants (preferably jeans), Closed-Toe shoes (leather boots recommended)
- G. Tape Measure and various hand tools like chipping hammers, pliers, etc.

### Student Learning Outcomes

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

- Demonstrate skills to sketch and design metal fabrication projects.
- Apply fabrication skills to build metal projects from a set of designs.
- Develop a strong student portfolio.

### Course Objectives

1. Use acquired knowledge and skills to design projects.
2. Use acquired skills to fabricate projects from a set of designs
3. Review, demonstrate and use proper safety procedures relating to welding and fabrication.
4. Develop basic drawings and materials list.
5. Select proper materials and supplies to construct a project.
6. Estimate the cost of a fabrication project.
7. Select and order appropriate materials.
8. Demonstrate the proper cutting techniques used to cut metal.
9. Prepare metal and material for welding.

10. Demonstrate proper welding techniques using shielded metal arc welding (SMAW) and gas metal arc welding (GMAW).
11. Demonstrate proper metal finishing procedures and techniques.
12. Understand the terminology associated with welding fabrication.
13. Coordinate and construct individual student portfolio. Include; resume, letter of application, work samples, bill of materials, and working drawings.

## **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.

### **Lecture Content:**

- Review: Shop / personal safety and orientation
- Review: Welding Safety
- Introduction into metal preparation, joining and cutting.
- Review of SMAW
- Review of GMAW
- Metal and materials
- Metal finishing
- Project plans: designs & sketches
- Project plans: working drawings
- Work Samples
- Bill of Materials
- Resume
- Cover Letter
- Finishing a fabrication project

### **Lab Content:**

- Safety orientation
- GMAW welding proficiency
- SMAW welding proficiency
- Torch cutting and plasma cutting
- Metal preparation, layout, cutting and fitting
- Metal clean-up and finishing
- Project plan
- Project fabrication

## **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 once per week, you are allowed 2 absences).

**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-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 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.

Design Project Portfolio: Each student will be required to design and build a full-size fabrication project during the second half of the semester. This project may be something of your own choosing. Some prior projects include, but are not limited to: BBQ’s, Fire Pits, Work/Shop Tables, Custom Furniture, etc. These projects must be made primarily out of metal, and if it is a project of your own design, then you are responsible for purchasing the metal required to build the project, so keep that in mind when choosing your design. Along with that, each student will be required to document all of their work on the project and compile it all into a portfolio that will be submitted for a grade in the lab section of the class. This portfolio will include a resume, cover letter, examples of your class project, including bill of materials, working drawings, photographs of the completed project, and a short report on the design and fabrication process of your project. Checks will be made throughout the semester to ensure that you are staying on track with your portfolio. The complete portfolio will be turned in on the last day of class. I will grade them, and return them to you on the day of the final exam.

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 Clock score will be included in the “Participation” part of your final grade.

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 fill in the blank in concert, therefore you should 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, unless I say otherwise. Lecture assignments (homework) will be accepted late up to the day of the test for that unit of the course; however, late assignments will be penalized 20% of the possible points. All lab assignments are due by the last day of instruction. Late lab assignments will not be accepted. Portfolios will **NOT** be accepted after the due date.

\*Final exam and Student Portfolios are **MANDATORY**. Failure to complete either of these assignments will result in a non-passing grade.

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

<u>Assignments &amp; Grades:</u>	Homework/Quizzes	10%
	Midterm	10%
	Final Exam	15%
	Lab Assignments/ Project Portfolio	60%
	<u>Participation</u>	<u>5%</u>
	<b>Total</b>	<b>100%</b>

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 work every scheduled work day. Individuals will be terminated if they are not responsible.
- Prepared: It is expected that an employee be prepared with 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 Spring Semester January 08
- Martin Luther King, Jr. Day (no classes, campus closed) January 15
- Last Day to drop class and receive full refund January 19
- Last Day to drop and avoid a "W" January 26
- Lincoln Day and Washington Day (no class, campus closed) February 16 & 19
- Last Day to drop class with a "W" March 8
  - letter grade will be assigned after this date
- Spring Break (Classes resume Monday, April 18<sup>th</sup>) March 25-29
- **Project Portfolio/Lab Objectives Due, NO EXCEPTIONS!!!** May 9
- Finals Week May 13-17

### **FINAL EXAM:**

**Thursday, May 16<sup>th</sup>, 2023 @ 9:30 – 11:30 am**

**Room: IND 19**

**(Shop Clean-up before exam: 7:00 – 9 am)**

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

## SUPPLY LIST FOR MFGT 52

### TEXT AND MATERIALS

#### Textbook:

##### Required:

Modern Welding by Bowditch, Goodheart-Willcox Publishing, 13<sup>th</sup> edition.

ISBN 979-8-88817-257-5 (**Hard copy text book** w/ 1-year online material access code)

Available in the College Book Store \$171.60

##### Optional:

Modern Welding by Bowditch, Goodheart-Willcox Publishing, 13<sup>th</sup> edition.

ISBN 979-8-88817-256-8 (**E-Text** w/ 1-year online material access code)

Available in the College Book Store \$104

- Pencil/pen, paper/notebook \$5-20
- 3 ring binder preferably with pockets (2" or larger recommended) \$5

#### **Lab Equipment Required:** (Tools and clothing do not need to be new)

- Work Clothing – Preferably 100% cotton tight weave, good fitting without holes or frayed edges. \*These do not need to be new clothing, just something you don't mind getting dirty.
  - Long sleeve shirt or canvas welding jacket \$40
  - Long pants (Jeans or work pants recommended, coveralls are OK) \$20-40
  - Hard sole, closed toe shoes (leather work boots recommended) \$50-175
- Clear Safety glasses with side shields (2-3 pairs, tinted lenses not allowed) \$5-10/pair
- Welding gloves (2-3 pairs, recommend Stick, MIG, and TIG gloves 1 pair each) \$10-20/pair
- Pliers to carry hot metal (vice grips w/wire cutters work best) \$15-20
- Wire cutters for MIG wire (MIG pliers or other type) \$15-20
- Tip cleaner for torch \$5
- Soapstone or silver pencil (4-6 pcs) \$5
- Oxy-acetylene goggles with #5 lens (must be able to wear with safety glasses) \$15
- Arc welding helmet with #10 lens \$40-300  
(preferably flip front, auto darkening ok but not required)
- Tape Measure (16-25 ft. min) \$10-35
- Combination Pad Lock (For your locker – can be purchased at Walmart, CVS, campus bookstore, etc.) \$5-10

#### **Recommended Lab Equipment:**

- Leathers or welding jacket \$50-80
- Flint striker \$5
- Ear Plugs (6-10 pairs) \$5
- Skull cap (welder's cap) \$10
- Chipping hammer \$10
- Wire brush \$5

\*\*\*Assuming you have no tools and no clothing that can be converted over to work clothing the total cost of supplies should be between \$300 and \$400. Fancy colors and graphics usually make items more expensive but do not increase usability. **Much cheaper tools can be found** at discount stores (like Harbor Freight) and swap-meets, however, quality may not be as good.

**SUGGESTED SOURCES OF EQUIPMENT for welding equipment (All addresses are in Fresno, CA unless otherwise noted...)**

Air Gas

2320 E. Church Avenue 268-8651  
525 N. Burke St. (Visalia) 733-3443

Fresno Oxygen & Welding Supply/Barnes Welding Supply

2701 E. Jensen Ave 233-9353  
2742 Clovis Avenue 292-1234  
2239 E. Main (Visalia) 733-2335  
311 S. Pine Ave. (Madera) 718-2072

WestAir Gases and Equipment

2929 E Dorothy Ave 486-8110

Linde Welding Gas & Equipment (Praxair)

2670 S. East Ave. 445-0131  
1051 E. Third St. (Hanford) 584-2982  
747 N. Plaza Dr. (Visalia) 651-8110  
2114 K St (Tulare) 688-1739  
112 W. Olive Ave (Madera) 674-7306

Valley Oxygen Inc.

760E. Lacy Blvd (Hanford) 587-1500

Weco Supply Co.

3735 E. Ventura Avenue 268-0161