

REEDLEY COLLEGE
Manufacturing Technology
MFGT 61 – Intermediate Welding (Sch.# 58889) Spring 2022
Rm.#: Ind. 11&19 --- M-W 7:00-1:50pm
9 week class --- Jan 10 – Mar 11

INSTRUCTOR: Andrew Mancini
Industrial Technology Building – Welding Department
Office: IND 22
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Office Hours:
 MTW: 6:30 – 7 am, 3 – 4 pm
 F: By appt only via Zoom (email to schedule)

COURSE DESCRIPTION

MFGT 61 – Intermediate Welding

Units: 4

Prerequisites: MFGT 11 or MFGT 60, or equivalent course or verified work experience

ADVISORIES: English 1A or 1AH and Mathematics 45

Continuation of welding techniques learned in MFGT 11 or MFGT 60. Emphasis will focus on shielded metal arc welding (SMAW), gas metal arc welding (GMAW), fluxcored arc welding (FCAW) and gas tungsten arc welding (GTAW/TIG). Welding techniques will be taught in horizontal, vertical and overhead positions on steel, stainless steel, and aluminum. There will also be further hands-on use of oxyfuel cutting (OFC), plasma cutting and carbon air arc gouging.

COURSE OBJECTIVES

1. Demonstrate safe procedures for using hand and power tools
2. Understand the benefits of each welding process used.
3. Identify the proper electrodes, fillers, and equipment for each process and metal type used.
4. List the parts of the SMAW, GMAW, GTAW, and FCAW welding machines.
5. Employ repair procedures using plasma and carbon air arc processes.

EXPECTED STUDENT LEARNING OUTCOMES

1. Properly set up and perform fusion welds with SMAW, GMAW, GTAW, and FCAW in the flat, horizontal, vertical and overhead positions.
2. Apply knowledge of setup and practice procedures for welding of aluminum and stainless steel with GMAW and GTAW processes.
3. Demonstrate competency of cutting procedures for the oxyfuel, plasma and carbon air arc processes.

Student Learning Outcomes are statements about what the discipline faculty hope you will be able to do at the end of the course. This is NOT a guarantee: the ultimate responsibility for whether you will be able to do these things lies with you, the student. In addition, the assessment of Student Learning Outcomes is done by the department in order to evaluate the program as a whole, and not to evaluate individual faculty performance.

III. COURSE CONTENT

A. UNIT TITLES

- Introduction--Safety
 - Ch 1 - An Essential Skill
 - Ch 2 - Welding Safety
 - Ch 3 - Joint Design and Welding Terms
- Welding Positions
 - Ch 13 - Horizontal
 - Ch 14 - Vertical
 - Ch 15 - Overhead
- Gas Tungsten Arc Welding - GTAW
 - Ch 16 - GTAW Equipment
 - Ch 17 - GTAW Procedures
 - Ch 18 - GTAW Applications
- Gas Metal Arc Welding – GMAW (Review)
 - Ch 19 - GMAW Equipment
 - Ch 20 - GMAW Procedures
 - Ch 21 - GMAW Applications
- Flux Cored Arc Welding – FCAW (Review)
 - Ch 22 - FCAW
- Welding Technology
 - Ch 39 – Weldability of Carbon and Alloy Steels
 - Ch 41 – Weldability of Stainless Steels
 - Ch 42 – Weldability of Non-ferrous Metals
 - Ch 44 – Welding symbols
- Job Applications, Resume, Interview Techniques

*content and order may be changed as deemed necessary by instructor

GRADING SCALE

1. Tests (Midterm 100pts and Final 100pts)	(20%)	200 points
2. Homework and Quizzes (Approx. 10)	(10%)	100 points
3. Daily Skills Objectives (Approx. 21)	(70%)	700 points
5. Time Clock Usage and Clean-up	<u>(Negative)</u>	<u>- 0 points</u>
	(100%)	1,000 points

- A = 900-1,000
- B = 800-899
- C = 700-799
- D = 600-699
- F = 0-599

- Homework must be turned by the group due date, or it will be penalized by 20%.
- Homework that is not reasonably complete will not be accepted.
- Homework **will not be accepted after the date of the unit exam.**
- Daily skills objectives **must be completed by 3/8/2022.**

ATTENDANCE & DAILY PARTICIPATION (It affects your grade)

Participation is very important. You must be in class in order to participate and complete all work. If you miss a class, you need to make up the time. This may be done any time during open lab, day or evening, regardless of the instructor. (It is necessary to get permission from the instructor who is teaching the class in session.)

Your participation grade will be lowered as absences increase, regardless of total points.

Point deductions as follows

Absence = -15 pts.

Tardy = -5 pts. For each - Morning and break and lunch

- There are no excused absences
- If you miss more than 3 classes in first half of the class (4.5 weeks), you may be dropped.
- Excess of a total of 4 absences anytime during class will result in failing the class.
- Roll will be taken verbally and by use of the time clock.
- To receive daily credit, you must punch in during the 15 minute time period prior to class starting and after class releases.
- You are required to find out from the instructor any material missed during absence.
- Test may be made up at the instructor's discretion.

IMPORTANT DATES

January	10 (M)	First day of class
January	17 (M)	Martin Luther King Day (Holiday – NO CLASS)
January	19 (W)	Last day to drop (To avoid a “W”)
February	08 (T)	Last day to drop (Letter Grade will be assigned after this date)
February	18 (F)	Lincoln Day (Holiday – NO CLASS)
February	21 (M)	Washington Day (Holiday)
March	08 (T)	Last day to weld
March	09 (W)	Final Exam – 9:00-11:00 a.m.

GENERAL POLICIES

- You are responsible to bring required materials to class. Textbooks and notebooks are required.
- You must wear safety equipment during lab (you will be counted absent if you do not have the equipment to work in lab.)
- **Cell phones** and similar devices should be silenced or left in lockers during class. Texting or taking calls during class is **not** allowed. 1st offense dismissed for the day, 2nd offense dismissed for a week.
- Lockers will be provided by the school for storage of projects and required materials. Students will provide locks.
- Supplies will be provided by the school for required objectives. Projects to be removed from the shop will require all material bills to be paid, as well as instructor's permission.
- School policy prohibits smoking, dipping snuff, eating, and drinking in the classroom and in the lab.
- Any conduct that disrupts or distracts the class or is dangerous will not be tolerated.
- Willful violations of any safety rule that endangers the health of yourself or others in the class or shop will result in immediate dismissal from the class.
- Do not leave the classroom or shop area without the instructor's permission.
- The content, order and policies in this syllabus may be changed if deemed necessary by the instructor.
- Visitors and children are not allowed in the lab area of the manufacturing shops.
- Cheating in any form will result in a zero for the assignment to dismissal from the class depending on circumstances.

*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.

TEXT AND MATERIALS

Textbook: Welding Skills by B.J. Moniz & R.T. Miller, American Tech Publishers, Inc., 3rdedition. ISBN #0826930107 (amazon.com)

Pencil/pen, paper

3-ring binder with pockets

Lab Equipment Required:

- Work Clothing – Preferably 100% cotton tight weave, good fitting without holes or frayed edges
 - Long sleeve shirt
 - Long pants (coveralls are OK)
 - Work shoes which cover your feet well. (Preferably leather work boots)
- Clear Safety glasses with side shields
- Welding gloves – two pair (one heavy weight and one light weight)
- Pliers to carry hot metal (Vise grip 10WR)
- Wire cutters for MIG wire
- Tip cleaner for torch
- Flint striker
- Soapstone or silver pencil
- Oxy-acetylene goggles with #5 lens (must be able to wear with safety glasses)
- Arc welding helmet with #10 lens (preferably flip front) -- auto-darkening is optional
- 10 clear replacement lenses for your helmet
- Leathers
- Chipping hammer
- Wire brush
- Tape measure
- Skull cap (welder's cap)
- Ear Plugs (minimum of 10 pair)

SUGGESTED SOURCES OF EQUIPMENT (in Fresno and surrounding areas)

Air Gas

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

Fresno Oxygen & Welding Supply

245 M Street 233-6684
2742 Clovis Avenue 292-1234
6101 N. Blackstone 432-9353
Visalia 2239 E.Main 733-2335 Visalia

Praxair Gasses & Equipment

2701 E. Jensen 445-0131
Hanford- 1051 E. 3rd St. 584-2982 Hanford
Tulare- 2114 K St. 688-1739 Tulare

Weco Supply Co.

3735 E. Ventura Avenue 268-0161

WestAir Gases and Equipment

2929 E Dorothy Ave 486-8110
10331 W Goshen Ave Suite B 622-6104 Visalia

Valley Oxygen

760 E. Lacy Blvd. Hanford 587-1511 Hanford