

Welding Safety, Tools, and Equipment (WLDG 1323)



Credit: 3 semester credit hours (3 hours lecture)

Prerequisite/Co-requisite: None

Course Description

An introduction to welding equipment and safety practices, including OSHA standards for industry.

Required Textbook and Materials

1. *Modern Welding* by Althouse, Turnquist, Bowditch 2013
 - a. ISBN number is 978-1-60525-795-2
2. Notebook.
3. Black/Blue ink pen or Number 2 pencil

Course Objectives

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

1. Discuss the different types of welding.
2. Explain welding safety practices, involving Material Safety Data Sheets, the Hazardous Communications Act, and OSHA. List hazards associated with welding equipment and processes. Identify hazards associated with gasses, fluxes, electrodes, equipment and interpret an MSDS.
3. Use and maintain tools and equipment while practicing welding shop safety.
4. Name the different welding processes and explain the operation of each.

Course Outline

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

- A. Career paths of a welder**
 - Specific reasons for interest in a specific welding career
 - Career paths by certifications
- B. Welding safety practices, OSHA and the Hazardous Communications Act, and MSDS.**
 - Welding safety procedures
 - Hazards associated with basic welding gases, fluxes, and electrodes
 - Proper personal protective equipment (PPE)
 - OSHA and the Hazardous Communications Act
 - Material Safety Data Sheets (MSDS)
- C. Hazards associated with welding and oxyfuel cutting equipment and processes.**
 - Dangers of fumes produced while welding or cutting

WLDG 1323
Course Syllabus

- Dangers of fire and explosions
- Ventilation systems and fresh air supply

D. List the dangers and safety procedures when handling an oxyfuel welding/cutting rig.

- Dangers of high pressure gas cylinders
- Safety devices of high pressure gas cylinder and the safe handling procedures of high pressure cylinders
- Safety devices of high pressure cylinder regulators
- Reverse flow check valves and flashback arrestor
- Proper procedure the start-up, light and shut-down an oxyfuel torch system

F. Use and maintain tools and equipment

- Proper use of angle grinders, die grinders, saws, clamps, jack stands, etc.
- Proper maintenance and storage of shop tools

E. Basic shop math as it pertains to the welding industry

- Various measuring instruments and their application in the welding industry
- Add, subtract, multiply, and divide fractions
- Markings on a tape measure
- Fabrication tools

Grade Scale

- 90 – 100 A
- 80 – 89 B
- 70 – 79 C
- 60 – 69 D
- 0 – 59 F

Course Evaluation

Final grades will be calculated according to the following criteria:

| <i>Activity</i> | <i>Percentage</i> |
|-----------------|-------------------|
| Assignments | 30% |
| TEST | 70% |

Late Penalties will be assessed on all work turned in late.

Average a grade on all test and assignments of at least 70%.

Course Requirements

1. Complete all tests.
2. Use general shop safety procedures.
3. Complete reading assignments.
4. Identify gasses, fluxes, electrodes, equipment and interpret an MSDS.

Attendance Policy

- I. Students are allowed to miss two days without penalty; each additional day will result in the student's grade being dropped by a letter grade.

Example: 1 days absent = If student has an A average no penalty
 2 days absent = A drops to a B
 3 days absent = B drops to a C
 4days absent = C drops to a D (student must retake class)
 5 days absent = D drops to a F (student must retake class)

- II. Absences are counted for unexcused, excused and coming to class late.
- III. 2 tardies = 1 absence
 - A. Tardy- arriving within 15 minutes after class begins or leaving before the end of class.
 - B. More than 15 minutes late you will be counted absent.
 - C. If you go to sleep in class you will be counted absent.
- IV. **Excused absences.** Only given to allow students to make up missed work.
 - A. Will be given for documented Injury or Illness. Doctor's excuse required showing proof. Will count toward total days missed.
 - B. Will be given for documented Death in immediate family. Will count toward total days missed.
 - C. Approved LIT school functions; e.g. SkillsUSA, SGA etc. Will not count toward total days missed
 - D. It is the student's responsibility to obtain from the instructor any handouts or assignments for classes missed. Lectures will not be repeated.

WLDG 1323
Course Syllabus

- V. If you wish to drop, you are responsible for the drop process. I will not initiate the drop, no matter how many absences or zeroes you have; that is, if you stop coming to class and do not drop, you will earn an “F” in the course. Students are only allowed to drop 6 times in their college career.

Classroom Policies

1. No electronic devices of any kind (cell phones, I-pod, headphone, etc.) will be tolerated in the classrooms or labs. If you are seen using any electronic device you will be asked to leave the class for the day.
2. No food or drink will be allowed in the classroom.
3. No derogatory or foul language will be tolerated.
4. Zero tolerance policy for sexual harassment.
5. Zero tolerance policy of racial or ethnic discrimination.
6. Be considerate of others in the classroom. Remember they paid for the class just like you.

Disabilities Statement

The Americans with Disabilities Act of 1992 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. Among other things, these statutes require that all students with documented disabilities be guaranteed a learning environment that provides for reasonable accommodations for their disabilities. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409) 880-1737 or visit the online resource:

<http://www.lit.edu/depts/stuserv/special/defaults.aspx>

Student Code of Conduct Statement

It is the responsibility of all registered Lamar Institute of Technology students to access, read, understand and abide by all published policies, regulations, and procedures listed in the *LIT Catalog and Student Handbook*. The *LIT Catalog and Student Handbook* may be accessed at www.lit.edu or obtained in print upon request at the Student Services Office.

Student Services Office.

Course Schedule

| Week | Topic | Reference |
|------|---|-------------|
| 1&2 | Course introduction and policies | Syllabi |
| | Safety in the Welding Shop | Chapter 1 |
| | The Welding shop | Chapter 32 |
| | <ul style="list-style-type: none"> • Lecture • Test | |
| 3 | Shielded Metal Arc Welding Equipment Pages 117-137 | Chapter 5 |
| | Shielded Metal Arc Welding | Chapter 6 |
| | <ul style="list-style-type: none"> • Lecture • Test | |
| 4 | Oxyfuel Gas Welding Equipment and Supplies | Chapter 11 |
| | Oxyfuel Gas Welding | Chapter 12 |
| | <ul style="list-style-type: none"> • Lecture • Test | |
| 5 | Oxyfuel Gas Cutting Equipment and Supplies | Chapter 13 |
| | Oxyfuel Gas Cutting | Chapter 14 |
| | <ul style="list-style-type: none"> • Lecture • Lab: Chapter Exercises • Test | |
| 6 | Getting and holding a Job in the welding Industry | Chapters 33 |
| | Technical Data | Chapter 34 |
| | <ul style="list-style-type: none"> • Project: As Assigned • Test | |