

Intermediate Pipe Welding (WLDG 2406)



Credit: 4 semester credit hours (2 hours lecture 8 hour lab)

Prerequisite/Co-requisite: WLDG 2443

Course Description

A comprehensive course on the welding of pipe using shielded metal arc welding (SMAW) process. Position of welds will be 1G, 2G, 5G, and 6G using various electrodes. Topics covered include electrode selection, equipment setup, and shop safety.

Required Textbook and Materials

1. *Modern Welding* by Althouse, Turnquist, Bowditch 2013
 - a. ISBN number is 978-1-60525-795-2
2. Personal Tool List (approximately \$150-\$250).
 1. Hood
 2. Welders cap
 3. Shade 10 or 11 lens
 4. Clear lens (10)
 5. Long sleeve 100% cotton shirt or leather sleeves or leather jacket
 6. Long 100% cotton work pants (jeans)
 7. High top leather boots (steel toe)
 8. Leather gloves
 9. Chipping hammer
 10. Wire brush
 11. Safety glasses
 12. Cutting goggles or glasses (shade 5)
 13. Measuring tape
 14. Tip cleaner
 15. 12" combination square
 16. Pliers

Students will not be allowed in class without the proper equipment and clothing

Course Objectives

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

1. Describe equipment and pipe preparation.
2. Perform 1G, 2G, 5G, and 6G, welds using various electrodes.

Course Outline

- I. Oxy-Fuel Cutting
 - A. Proper safety procedures
 - B. Square cut pipe to desire length using oxy-fuel torch
 - C. Bevel pipe to desired length using oxy-fuel torch

WLDG 2406
Course Syllabi

- D. Oxy-fuel square cuts and beveled cuts on pipe using an automatic warts cutting machine
- E. Square and beveled plasma arc cuts and beveled cuts using the warts automatic cutting machine
- II. SMAW Electrodes
 - A. Safety hazards of electrodes
 - B. Types and sizes of electrodes
 - C. Electrodes for various size pipe and positions
- III. Equipment
 - A. Hazards of the welding machine and equipment and perform daily checks
 - B. Setup and adjustment of the smaw welding station
 - C. Polarity of the smaw machine welding procedure
 - D. Power source
- IV. SMAW Pipe Welding
 - A. Single V groove pipe weld in the 1g position
 - B. Single V groove pipe weld in the 2g position
 - C. Single V groove pipe weld in the 5g position
 - D. Single V groove pipe weld in the 6g position
- V. Inspection And Testing
 - A. Nondestructive test to detect flaws and defect
 - B. Destructive test to aws standards

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:

| | |
|-------------|-----|
| Assignments | 30% |
| TEST | 70% |

Late Penalties will be assessed on all work turned in late. 5 points per day.

Course Requirements

1. Perform 1G welds using various electrodes.
2. Perform 2G welds using various electrodes.
3. Perform 5G welds using various electrodes to ASME standard for testing
4. Perform 6G welds using various electrodes.
5. Successfully complete the Work Keys tests (Reading for Information, Reading Writing).

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: 2 days absent = If student has an A average no penalty
 3 days absent = A drops to a B
 4 days absent = B drops to a C
 5 days absent = C drops to a D (student must retake class)
 6 days absent = D drops to a F (student must retake class)
- II. Absences are counted for unexcused, excused and coming to class late.
- III. 3 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 the 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.
- 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

- 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.
- No food or drink will be allowed in the classroom.
- No derogatory or foul language will be tolerated.
- We have a zero tolerance policy for sexual harassment.
- We have a zero tolerance policy of racial or ethnic discrimination.
- 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 office in Student Services, Cecil Beeson Building.

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.

Course Schedule

| Week | Topic | Reference |
|-------|---|--|
| 1/2 | Course introduction and policies Shop orientation and safety procedures Measuring and Lay-out tools Use the Oxyfuel torch to cut pipe to length Use of pipe beveling machine 1G (roll out) pipe welds Test to visual standards • LECTURE/LAB | Syllabi Instructor Demonstration/ Supervision |
| 3-6 | Use of pipe beveling machine 2G pipe welds Test to visual standards • LECTURE/LAB | Instructor Demonstration/ Supervision |
| 7-12 | Use of pipe beveling machine 5G pipe welds (test to ASME standard for Certificate program) • LECTURE/LAB | Instructor Demonstration/ Supervision |
| 13-16 | Use of pipe beveling machine 6G pipe welds Test to visual standards • LECTURE/LAB | Instructor Demonstration/ Supervision |