Advanced Pipe Welding (WLDG 2453)

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

Prerequisite/Co-requisite: WLDG 2406

Course Description
Advanced topics involving welding of pipe using the shielded metal arc welding (SMAW) process. Topics include electrode selection, equipment setup, and safe shop practices. Emphasis on weld positions 5G and 6G using various electrodes.

Required Textbook and Materials
   a. ISBN number is 978-1-60525-795-2
2. Tool List (approximately $150).
   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.
3. Perform 5G and 6G on various sizes pipe.

Course Outline:
1. Oxy-fuel cutting
   - Perform proper safety procedures
   - Manually square cut pipe to desire length using oxy-fuel torch

Approved 12/2013
Manually bevel pipe to desired length using oxy-fuel torch
Perform oxy-fuel square cuts and beveled cuts on pipe using an automatic watts cutting machine
Perform square and beveled plasma arc cuts and beveled cuts using the watts automatic cutting machine

2. **SMAW electrodes and GTAW filler metal**
   - Safety hazards of electrodes
   - Types and sizes of electrodes
   - Electrodes for various size pipe and positions

3. **Equipment**
   - Welding machine and equipment and perform daily checks
   - Setup and adjustment of the SMAW welding station
   - Polarity of the SMAW machine welding procedure
   - Power source

4. **SMAW and GTAW pipe welding**
   - perform single Vee groove pipe weld in the 1G position
   - perform single Vee groove pipe weld in the 2G position
   - perform single Vee groove pipe weld in the 5G position
   - perform single Vee groove pipe weld in the 6G position

5. **Inspection and testing**
   - Nondestructive test to detect flaws and defect
   - Destructive test to AWS standards

**Grade Scale**

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Grade</th>
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<tbody>
<tr>
<td>90 – 100</td>
<td>A</td>
</tr>
<tr>
<td>80 – 89</td>
<td>B</td>
</tr>
<tr>
<td>70 – 79</td>
<td>C</td>
</tr>
<tr>
<td>60 – 69</td>
<td>D</td>
</tr>
<tr>
<td>0 – 59</td>
<td>F</td>
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**Course Evaluation**

Final grades will be calculated according to the following criteria:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Assignments</td>
<td>30%</td>
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<tr>
<td>Tests</td>
<td>70%</td>
</tr>
</tbody>
</table>

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

**Course Requirements**

1. Complete WorkKeys tests.

2. Successfully complete an AMSE Welding Certification for a 6G pipe weld.
3. Bevel pipe to length using beveling machine.
5. Perform 5G and 6G on various sizes pipe.

**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 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.

**Course 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. We have a zero tolerance policy for sexual harassment.
5. We have a zero tolerance policy of racial or ethnic discrimination.
6. Be considerate of others in the classroom.

**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](http://www.lit.edu) or obtained in print upon request at the Student Services Office.

**Course Schedule**

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Reference</th>
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</thead>
</table>
| 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  
Visual test  
• LECTURE/LAB | Syllabi |
| 3-6  | Use of pipe beveling machine  
2G pipe welds  
Visual test  
• LECTURE/LAB | Instructor Demonstration/Supervision |
| 7-12 | Use of pipe beveling machine  
5G pipe welds  
Visual Test  
• LECTURE/LAB | Instructor Demonstration/Supervision |
<p>| 13-16| Use of pipe beveling machine | Instructor Demonstration/ |</p>
<table>
<thead>
<tr>
<th>Week</th>
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<th>Reference</th>
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<tbody>
<tr>
<td></td>
<td>6G pipe welds</td>
<td>Supervision</td>
</tr>
<tr>
<td></td>
<td>Test to ASME pipe certification test</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• LECTURE/LAB</td>
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