COASTAL BEND COLLEGE  
WELDING  
SYLLABUS  
(Revised 11/13)

WLDG 2406  
Intermediate Pipe Welding (SMAW)

Semester Hours:  
4

Textbook:  
Modern Welding, Althouse,  
Turnquist, Bowditch

Course Description:  
A comprehensive course on the welding of pipe using the shielded metal arc welding (SMAW) process. Welds will be done using various positions. Topics covered include electrode selection, equipment setup, and safe shop practices.

Course Learning Outcomes:  
The student will describe equipment and required pipe preparation. The student will perform 1G, 2G, 5G, and 6G welds using various electrodes.

Supplementary Material:  
Filmstrips  
Handout Material  
Videos

Performance Objectives:

1. Given instructions and practice the student will be able to set-up and check for leaks on oxyacetylene station and use at least three types of pipe beveling machines used in the industry. This knowledge will be evidenced by laboratory demonstrations, completion of assignment sheets, and by scoring the college minimum satisfactory grade on a written exam.

   A. Demonstrate how to assemble an oxyacetylene rig and to test for leaks by using soap and water. The student must strive to assemble the rig without leaks.

   B. Prepare pipe nipples for welding with an oxyacetylene torch and chain, gear, and electric pipe beveling machines.

   C. Bevel pipes to a 30° or 37 1/2° bevel and tack them together with a 1/8” gap within a 1/16” tolerance.

2. Given instructions and practice the student will be able to run a stringer bead and finish welding two pipe nipples in the 1G, 2G, 5G, and 6G positions. This knowledge will be evidenced by laboratory demonstration, completion of assignment sheets, by destruction testing using the American Welding Society code specifications, and by scoring the college minimum satisfactory grade on a written exam.
A. Run a stringer bead and finish welding two pipe nipples in the 1G position.

B. Run a stringer bead and finish welding two pipe nipples down-hill in the 2G position.

C. Run a stringer and finish welding two pipe nipples in the 5G position.

D. Run a stringer and finish welding two pipe nipples in the 6G position.

**Teaching Methods:**

1. Hand-out material
2. Demonstrations
3. Individual and group instruction in the lab
4. Groups of four or five students will work together on a lab project

**Evaluation Methods:**

1. Attendance
2. Written Exam
3. Lab work
4. Tolerance of finished work
5. Destructive method by bending test strips in a guided bend tester

**Grading Policy:**

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Lecture Evaluation</td>
<td>20%</td>
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<tr>
<td>Practical Application (Lab)</td>
<td>80%</td>
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**Attendance Policy:**

Students must attend all classes. Excessive absenteeism will have a detrimental effect on the student grade. Students can be dropped from classes for excessive absenteeism. The instructor will call roll at the beginning and end of each class or any time he/she feels it necessary. Three (3) times tardy will count as one (one) absence. The attendance record starts the first day of class beginning of each semester.

**Course Outline:**
I. Oxyacetylene Cutting and Welding Theory and Practice
   A. Different types of cutting and welding
   B. The oxyacetylene equipment
   C. Assembling oxyacetylene equipment
   D. Lighting equal-pressure types torch
   E. Torch adjustments
   F. The oxyacetylene cutting process
   G. Cutting attachments and cutting tips
   H. Cutting different kinds and thicknesses of metals

II. Prepare Pipe Nipples
   A. Flame cut pipe nipples with 30° degree bevel
   B. Prepare pipe nipples with a landing by grinding or hand filing
   C. Set the correct gap between two pipe nipples and prepare for welding

III. 1G Position
   A. Tack weld two pipe nipples and set them in the 1G position
   B. Run a stringer bead with E6010 electrodes or E6011 electrodes and finish welding with E7010 electrodes.

IV. 2G
   A. Tack weld two pipe nipples and set them in the 2G position
   B. Run a stringer bead with E6010 electrodes or E6011 electrodes and finish welding with E7010 electrodes.

V. 5G Position
   A. Tack weld two pipe nipples and set them in the 5G position.
   B. Run a stringer bead up-hill using E6010 electrodes and finish welding with E7018 electrodes.
   C. Run a stringer bead down-hill using E6010 electrodes and finish welding with E7010 electrodes.

VI. 6G Position
   A. Tack two pipe nipples and set them in the 6G position.
   B. Run a stringer bead in the up-hill position with E6010 electrodes and finish welding with E7018 electrodes.
   C. Run a stringer bead in the down-hill manner with E6010 electrodes and finish welding with E7010 electrodes.

**WELDING TECHNOLOGY**
COMPETENCY PROFILE  
SMAW-pipe  
(rev.8/10)  

STUDENT ___________________________ COURSE WLDG 2406  

INSTRUCTOR ___________________________ SEM./YEAR ___________________________  

RATING SCALE:  
4 Skilled: Can work independently with no supervision.  
3 Moderately Skilled: Can perform job completely with limited supervision  
2 Limited Skill: Requires instruction and close supervision.  
1 No Exposure: No experience or knowledge in this area.  

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<th>COMPETENCY</th>
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<td>Prepare material for correct weld procedure.</td>
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<td>Identifies and selects correct electrode</td>
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<td>Sets welding current for correct weld procedure.</td>
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<td>Makes V-groove, open stringer in the horizontal test position. (2G)</td>
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<td>Makes V-groove, open stringer in the uphill (bellhole) test position. (5G)</td>
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<td>Makes V-groove, open stringer in the downhill (bellhole) test position. (5G)</td>
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<td>Makes V-groove, open stringer in the uphill 45 deg. (Arkansas bellhole) test position. (6G)</td>
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<td>Makes V-groove, open stringer in the downhill 45 deg. (Arkansas bellhole) test position. (6G)</td>
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<td>Prepares weld for test.</td>
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<td>Passes destructive test.</td>
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