COASTAL BEND COLLEGE
WELDING
SYLLABUS
(Revise 11/13)

WLDG 1457: Intermediate Shielded Metal Arc Welding (SMAW)

Semester Hours: 4

Textbook: Modern Welding by Goodheart-Wilcox Co., Inc. (Library of Congress, Catalog Card No. 6502044)

Course Description: A study of the production of various fillets and groove welds. Preparation of specimens for testing in various positions.

Course Learning Outcomes: The student will identify principles of arc welding; describe arc welding operations of fillet and groove joints; explain heat treatments of low alloy steels; and explain weld size and profiles. The student will prepare test plates; perform fillet welds in the overhead position; perform air carbon arc weld removal; perform bevel groove welds with backing plates in various positions; and demonstrate use of tools and equipment.

Supplementary Materials: Videos, DVD, Handout Material

Performance Objectives:

1. Given instructions and practice the student will be able to perform the following tasks in the classroom and welding shop. This knowledge will be evidenced by laboratory demonstrations completion of assignment sheets, destructive methods of evaluating the welds to conform with American Welding Society standards, and by scoring the college minimum satisfactory grade on a written exam.

   A. Prepare metal for welding with a flame torch and grinder.

   B. Tack weld two plates with the correct gap with and without a back-up strap.

   C. Run a stringer bead and finish welding the plates in the flat position.

   D. Run a stringer bead and finish welding a set of plates in the uphill motion.
E. Run a stringer bead and finish welding a set of plates in the 3G position.

F. Run a stringer bead and finish welding a set of plates in the 4G position.

**Teaching Methods:**

1. Transparencies in conjunction with lectures
2. Individual and group instructions in the lab
3. Groups of four or five students will work together on lab projects

**Evaluation Methods:**

1. Written examinations
2. Attendance
3. Lab test and lab performance
4. Destructive method using a guided bend tester

**Grading Policy:**

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<tr>
<th>Evaluation Type</th>
<th>Percentage</th>
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<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. Preparing the metal for welding
   
   A. Bevel Plate
   B. Grind a landing on the level
   C. Set the correct gap for root pass
   D. Cut and tack back-up strap
   E. Be able to set plate in the correct position

II. Stringer bead or root pass
A. Be able to run a stringer bead by stepping the electrode with 6010 and 6011 electrode 1/8 inch in diameter.

B. Be able to run a stringer bead using a back-up strap and using a 7018 electrode 1/8 inch in diameter.

III. Filler Bead

A. Fill up the groove uphill motion using 7018 electrode 1/8 inch in diameter.

B. Fill up a vertical groove in the downhill motion using 6010 or 6011 electrode 1/8 inch in diameter.

IV. Finish Bead

A. Finish the weld in the 3G position using the Lace or weaving motion with 7018 electrodes. Uphill direction and multi-pass with 6010 or 6011 electrodes.

B. Finish the weld in the 4G position using multi-passes with three beads exposed with 7018 electrodes.

COMPETENCY PROFILE

STUDENT __________________________ COURSE WLDG 1457

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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<tr>
<td>COMPETENCY</td>
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<tr>
<td>Identifies and selects power source.</td>
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<td>Identifies and makes proper electrode selection.</td>
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<td>Identifies, selects joint design, and prepares material for weld procedure.</td>
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<td>Sets welding current for correct weld procedure.</td>
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Identifies welding problems, their causes, and takes corrective action.

Makes groove weld in the vertical position. (3G)

Makes groove weld in the overhead position. (4G)

Prepares weld for test.

Passes visual test.

Passes destructive test

**SCANS FOUNDATIONS**

**PERSONAL QUALITIES:**

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<th><strong>Responsibility:</strong></th>
<th>Exert a high level of effort and persevere toward goal attainment.</th>
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<tr>
<td><strong>Self-Esteem:</strong></td>
<td>Believe in one's self-worth and maintain a positive view of oneself.</td>
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<td><strong>Sociability:</strong></td>
<td>Demonstrate understanding, friendliness, adaptability, empathy, and politeness in group settings.</td>
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<td><strong>Self Management:</strong></td>
<td>Assess oneself accurately, set personal goals, monitor progress, and exhibit self control.</td>
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<td><strong>Integrity and Honesty:</strong></td>
<td>Choose ethical courses of action</td>
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