

1. COURSE NAME/TITLE: **BASIC** Arc Welding
2. COURSE PREFIX AND NUMBER: WELD 1130
3. COURSE LECTURE/LAB/CREDIT HOURS: CONTACT HOURS:
4. COURSE MAXIMUM ENROLLMENT:
5. COURSE FACILITY: Welding Technical Lab
6. SAFETY REQUIREMENTS: VHS safety tapes are viewed by students and a specific list of shop safety rules is issued to each student.
7. COURSE LAB FEE:
- 7a. EQUIPMENT REQUIREMENTS: Goggles, hat, striker, tip cleaner, pliers, gloves, shield #10 lens, sleeves (leather), and grinder (optional). Hammer & wire brush.
- 7b. COURSE DESCRIPTION: Fundamentals of the (SMAW) Shielded Metallic Arc Welding process, various machines, uses & classification of electrodes, shop safety, and running stringer beads in all positions on various thicknesses of steel plate.
- 7c. PREREQUISITES: None
8. COURSE GOAL:
 1. A basic knowledge of the techniques involved in the electric arc welding of stringer and weave beads on steel plate in the flat, vertical, overhead, and horizontal positions.
 2. The development of safe welding shop practices and good work habits.
 3. A knowledge of the most widely accepted electrodes used for welding steel plate.
 4. A useful knowledge of the various welding machines and their applications and limitations.
9. COURSE OBJECTIVES:
 1. Operate both alternating and direct current welding machines.
 2. Pad on steel plate in all positions.
 3. Use oxy-acetylene flame cutting apparatus, including proper assembly and safety precautions, and to satisfactorily prepare the edges of steel plate for welding.
 4. Demonstrate the ability to use the A.W.S. electrode selection guide.
 5. Follow the various rules and regulations regarding shop safety.
 6. Distinguish between straight and reverse polarity with respect to welding electrodes.
 7. Identify the parts and safety devices associated with oxygen and acetylene cylinders.
- 10a. COURSE WEEKLY OUTLINE:

Week 1 and 2	Setting up cutting equipment Adjusting flames and pressures for various thicknesses- steel plate Operation of flame cutting machine
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Week 2 and 3	Machine control and adjustment Striking the arc Depositing the bead Elementary stringer beads
Week 4	Elementary stringer beads Padding
Week 5	Introduction to the tee plate (filler weld)
Week 6 and 7	Work on padding (3) stringers on a flat tee plate (3" x 6" plate)
Week 8	Vertical tee plate with (3) stringers
Week 9 and 10	Vertical and overhead tee plate
Week 11 and 12	Work on fine tuning welds in flat, vertical and overhead positions
Week 13 and 14	Testing on tee plates

10b. **LEARNING ACTIVITIES:**

- A. The principle means of teaching used is the lecture demonstration method used on an individual basis.
- B. There are periodic assigned readings for the student.
- C. The moving picture projector is used periodically.
- D. The learning lab in the Learning Resource Center is used by those students who either have fallen behind or who are advanced and wish to explore ideas and concepts related to welding.

11. **INSTRUCTIONAL MATERIALS:**

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| 1. <u>Lessons in Arc Welding</u> | Lincoln Electric Company |
| 2. <u>Oxy-Acetylene Handbook</u> | Linde Company |
| 3. <u>Procedure Handbook of Arc Welding Design and Practice</u> | Lincoln Electric Company |
| 4. <u>Welding Handbook</u> | American Welding Society |
| 5. <u>Modern Welding</u> | Althouse-Turnquist-Bowditch |

12. **TYPES OF ASSESSMENT:**

- A. Daily work (visual testing)
- B. Mid-term practical (on safety and equipment usage)
- C. Final written examination (on application and limitations of the process (SMAW))

Course Grade Computation	A 90-100
50% Practical Welding	B 80- 90
25% Mid-term on safety and equipment usage	C 70- 80
25% Final written (completion of filler weld)	D 60- 70
	F Below 60

13. **COURSE TEXT AND READINGS:**

Welding Principles & Practices by Raymond Sacks. Located in the Delgado bookstore. Cost \$35.00.