

SOUTHEAST COMMUNITY COLLEGE
MANUFACTURING OCCUPATIONS
WELDING TECHNOLOGY
COURSE SYLLABUS
February 6, 2024

I. CATALOG DESCRIPTION

Course Number: WELD1060
Course Title: Basic OA/SMAW
Prerequisite(s): University Ag Education or Technical Skills Instructor student, or with permission of welding program chair

Catalog Description: Basic theory, safety, equipment, application and operation of Oxy-Acetylene welding, cutting and Shielded Metal Arc Welding with laboratory exercises. Note: this class will not meet welding program criteria and is not available to students wishing to enter the welding program.

Credit Hours: 4.0
Class Hours: 30
Lab Hours: 90
Total Contact Hours: 120

II. COURSE OBJECTIVES: *Course will:*

- A. Discuss SMAW.
- B. Discuss use of personal protection equipment required.
- C. Apply the theory of Shielded Metal Arc Welding Process.
- D. Demonstrate the safe operation of Shielded Metal Arc Welding.
- E. Demonstrate the set-up equipment needed to Shielded Metal Arc Weld.
- F. Discuss OA.
- G. Introduce oxyacetylene welding and cutting processes.
- H. Discuss the safe handling and operation of oxyacetylene cutting and welding systems.
- I. Discuss the proper set-up and break down of oxyacetylene systems.
- J. Introduce cylinder safety, transportation and personal protective equipment.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES:

A. STUDENT LEARNING OUTCOMES: *The student will be able to:*

- 1. Utilize safely handling and operating oxyacetylene cutting and welding systems.
- 2. Understand the proper use, care, handling and storage of oxyacetylene equipment and supplies.
- 3. Understand the personal protective equipment required for oxyacetylene welding and cutting.
- 4. Understand the theory of the Shielded Metal Arc Welding and the Air Carbon Arc processes.
- 5. Understand the safe operation of the Shielded Metal Arc Welding and Air Carbon Arc processes.
- 6. Demonstrate the proper setup and operation of a Shielded Metal Arc welder with various electrodes.
- 7. Demonstrate the proper setup and operation of the Air Carbon Arc equipment with various types of electrodes.

B. GENERAL EDUCATION LEARNING OUTCOMES:**GELO # 3: Critical Thinking & Problem Solving Outcomes:**

1. Collect, identify, interpret and analyze data.
2. Synthesize information to arrive at reasoned solutions to problems.
3. Evaluate ideas presented in writing, medial, speech, or artistic presentations.
4. Evaluate the validity of arguments, alternatives, data, outcomes, and/or impacts of actions.
5. Acquire and integrate knowledge and construct relationships across disciplines.

IV. CONTENT/UNIT OF INSTRUCTION**A. OA**

1. Introduction
2. History
3. Gasses for Oxyacetylene
4. Equipment
5. Oxyacetylene Welding of Ferrous Metals
6. Oxyacetylene Welding of Non-Ferrous Metals
7. Miscellaneous Applications
8. Equipment Set-Up

B. SMAW

1. Introduction
2. History of SMAW
3. Hazards
4. Safety and protective equipment
5. Basic electricity for SMAW power sources
6. Power sources for welding
7. Parts of the welding circuit
8. Electrodes
9. Variables affecting a good weld
10. Controlling arc blow
11. Types of joints
12. Position of welds
13. Types of deposits of beads
14. Welding design and bead profiles

V. INSTRUCTIONAL MATERIALS

Text(s) Required: Refer to Course Information Document and/or course instructor for required text(s).

Other Resources: Supplemental handouts supplied by instructor.
Notebook
Tools/Supplies for the 1st and 2nd terms listed on the Welding Technology Program required tool list

VI. METHODS OF PRESENTATION/INSTRUCTION**A. Methods of presentation typically include a combination of the following:**

1. Lecture
2. Small and large group discussion

3. Video presentation
4. Demonstrations
5. Project boards
6. Flip charts
7. Handouts
8. Observations
9. Assigned lab projects
10. Field trips

VII. METHODS OF EVALUATION

A. Methods of evaluation typically include a combination of the following:

1. Notebook (if required)
2. Quizzes/tests
3. Lab grades

Letter grades will be based on the SCC Standard Grade Scale Policy. **Note:** See course information document for specific details on how the course grades will be calculated.

VIII. SPECIFIC COURSE REQUIREMENTS:

A. Student must:

1. Complete all tests, projects, assignments, and notebook (if required).
2. Earn a final grade of C (70%) or higher.

B. Program shop safety rules will be followed. Please see the Course Information Document.