

SOUTHEAST COMMUNITY COLLEGE
MANUFACTURING OCCUPATIONS WELDING
TECHNOLOGY
COURSE SYLLABUS
September 12, 2023

I. CATALOG DESCRIPTION

Course Number: WELD1191
Course Title: GMAW AND SMAW Industrial Welding Practices
Prerequisite(s): See course outline for specific prerequisite(s)

Catalog Description: Study of theory and practice of welding and cutting fundamentals. This course includes safety, oxy-fuel braze welding, flame cutting, Gas Metal Arc Welding, Shielded Metal Arc Welding and plasma cutting.

Credit Hour: 1.5
Classroom Hours: 8
Lab Hours: 45
Total Contact Hours: 53

II. COURSE OBJECTIVES: *Course will:*

- A.** Cover shop safety as applied to welding
- B.** Cover oxyacetylene equipment and set-up
- C.** Cover oxyacetylene torch brazing
- D.** Cover oxy-fuel hand torch cutting
- E.** Cover GMAW equipment and set-up
- F.** Cover hands on Gas Metal Arc Welding sheet and plate steel
- G.** Cover hands on Shielded Metal Arc Welding on Sheet and Plate steel
- H.** Cover plasma cutting

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES

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

- 1. Understand the theory of oxy-fuel torch cutting.
- 2. Understand the component parts of the oxyacetylene cutting outfit.
- 3. Understand how to setup, turn on, light torch, and shut down oxyacetylene cutting outfit.
- 4. Understand the safe operation of oxyacetylene cutting processes.
- 5. Understand how to properly and safely torch cut with the oxyacetylene cutting torch.
- 6. Identify welding hazards and their causes.
- 7. Practice torch brazing.
- 8. Demonstrate their ability to use the oxyacetylene cutting processes.
- 9. Understand the theory of gas metal arc welding.
- 10. Understand the components of the Gas Metal Arc Welding and Shielded Metal Arc Welding equipment.
- 11. Demonstrate their ability to setup a power source and safely operate the arc welding equipment.
- 12. Practice welds on sheet metal and plate steel using GMAW and SMAW processes.
- 13. Practice plasma cutting.

B. GENERAL LEARNING OUTCOME:

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. Safety Equipment
- B. Oxygen Fuel Cutting Equipment
- C. Oxyacetylene Equipment Setup
- D. Braze Welding
- E. Oxyacetylene Torch Cutting Projects
- F. Gas Metal Arc Welding Equipment
- G. Shielded Metal Arc Welding Equipment
- H. Equipment Setup
- I. Arc Welding Projects
- J. Plasma Cutting

V. INSTRUCTIONAL MATERIALS

Required Text(s): See Course Information Document for current textbook.

Tools: Personal Protective Equipment (PPE)
Oxyacetylene Equipment
Gas Metal Arc Welding Equipment
Shielded Metal Arc Welding Equipment
Plasma Arc Cutting Equipment

V. 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. Transparencies
5. Demonstrations
6. Project boards
7. Flip charts
8. Handouts
9. Observations
10. Assigned lab projects
11. Field trips.

VI. METHODS OF EVALUATION

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

1. Notebook (if required)
2. Quizzes
3. Tests
4. Lab grades

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

VII. SPECIFIC COURSE REQUIREMENTS

A. PARTICIPATION ***REVIEW*******

1. For every hour of classroom, learning students are expected to perform two hours of related studies as homework or hands-on / simulated / on-line activities outside the classroom.
2. Students are expected to be responsible for meeting scheduled class/lab/homework and assigned due dates unless prior arrangements have been made with the instructor 24 hours before the due date.
3. Students are expected to complete all exams, quizzes, lab activities and assignments/ homework at the scheduled times unless PRIOR arrangements have been made with the instructor before the due date and time.
4. When reasonably possible, and only when prior arrangements have been made, students may ask the instructor to have a test or exam rescheduled prior to 24 hours before the activities scheduled date and time
5. Unscheduled Quizzes may be given at any time and may not be repeated or taken at a later time, unless approved by the instructor.
6. Exceptions due to emergency absences will be considered on an individual basis.

B. Program shop safety rules will be followed.

C. Please see the course outline for any additional safety rules established by the instructor.