

SOUTHEAST COMMUNITY COLLEGE
ADVANCED TECHNOLOGIES AND SKILLED TRADES DIVISION
WELDING TECHNOLOGY
COURSE SYLLABUS
November 21, 2025

I. CATALOG DESCRIPTION

Course Number: WELD2410
Course Title: Welding Codes & Standards
Prerequisite(s): WELD1128, WELD1130 and WELD2420

Catalog Description: Study of welding codes and standards required for the qualification and certification of welding personnel.

Credit Hours: 3.0
Classroom Hours: 38
Lab Hours: 23
Total Contact Hours: 61

II. COURSE OBJECTIVES: *Course will:*

- A.** Introduce the structure and use of major welding codes, including how to navigate clauses, tables and figures to answer code-based questions.
- B.** Present the requirements for welding procedure and performance qualification, including essential variables and the use of prequalified WPSs, qualified WPSs and SWPSs.
- C.** Perform inspections and complete documentation, as required by various codes using inspection equipment.
- D.** Provide hands-on familiarity with common welding qualification tests, including plate and pop setups, visual testing and destructive testing methods.
- E.** Outline the roles and responsibilities of CWIs and ATFs in qualification, documentation and code compliance.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES

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

- 1. Navigate welding codes and standards-including AWS D1.1, ASME Section IX, and API 1104-to locate specific clauses, tables and figures and answer code-based questions related to fabrication, procedure qualification, welder qualification, inspection and acceptance criteria.
- 2. Apply essential variables and qualification requirements for both welding procedure qualifications (PQR/WPS) and welder performance qualifications (WPQ) by interpreting WPS, PQR, and WPQ documents; understand thickness and weld position ranges; evaluating compliance with code-mandated variables and acceptance criteria; and distinguishing between prequalified WPSs, qualified WPSs and SWPSs (Standard Welding Procedure Specifications) under applicable codes.
- 3. Apply code-based material and filler metal requirements, including identifying base metal group numbers, understanding filler metal F-numbers, and recognizing differences between filler metal specifications and classifications.

4. Explain and demonstrate the process used for common welder qualification tests by practicing the setup, preparation, and welding of typical plate and pipe test configurations; performing visual and destructive testing on these practice plates; understanding required test methods; and identifying how qualification ranges are established from successful test results.
5. Describe the roles and responsibilities of CWIs and Accredited Test Facilities (ATFs) in welder qualification, including oversight, documentation, test administration, and distinctions between employer-based qualifications and ATF-based certifications.

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/UNITS OF INSTRUCTION

- A. Welding codes, specifications, standards, quality control
- B. Welding procedures, qualification, certification, documentation
- C. Welding variables, specific code requirements, workmanship
- D. Inspection, verification, inspection tools and gauges
- E. Computer-generated reports
- F. Hands-on inspection
- G. Exams (written) open code
- H. Preparation for qualification/certification through ATF

V. INSTRUCTIONAL MATERIALS

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

Other Resources: Welding codes, specifications, standards, drawings and written procedures.
Testing equipment and weld evaluation tools and equipment.
Texts
Calculator
ATF documents

VI. METHODS OF PRESENTATION/INSTRUCTION

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

1. Lecture
2. Audio-visual aids
3. Laboratory experiments
4. Hands-on demonstrations and mock-ups

VII. METHODS OF EVALUATION

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

1. Attendance
2. Participation
3. Contributions
4. Unit exercises

5. Research
6. Homework
7. Written quizzes and exams

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.

VII. SPECIFIC COURSE REQUIREMENTS

A. Successful completion of all assignments, exams and projects.

B. Grading

1. It is the students' responsibility to make up work when absent.
2. All assigned work must be turned in on the day due or a late grade will be given (10% deduction each late day).
3. The instructor reserves the right to revise assignments in accordance to the progress of the class at any time of the term.
4. Minimum course grade of C (70 Percent).