WELD-241: WELDING TECHNOLOGY 4

Effective Term
Fall 2026

CC Approval
11/07/2025

AS Approval
11/13/2025

BOT Approval
11/20/2025

COCI Approval
03/05/2026

SECTION A - Course Data Elements

CB04 Credit Status
Credit - Degree Applicable

Discipline

Minimum Qualifications	And/Or
Welding (Any Degree and Professional Experience)	

Subject Code
WELD - Welding Technology
Course Number
241

Department
Welding Technology

Division
Career Education and Workforce Development (CEWD)

Full Course Title
Welding Technology 4

Short Title
Welding Technology 4

CB03 TOP Code
0956.50 - *Welding Technology

CIP Code
48.0508

CB08 Basic Skills Status
NBS - Not Basic Skills

CB09 SAM Code
B - Advanced Occupational

Rationale
The SLOs were revised to streamline outcomes, eliminate redundancy, and ensure alignment with current industry standards and measurable skills for student success.

SECTION B - Course Description

Catalog Course Description
This is the capstone class of Welding Technology and applies the manipulative skills of welding with fabricating techniques. The student will be required to use the skills developed by drafting a project, preparing a materials list, and estimating the time required to fabricate the project.

This is the fourth semester in a series of Welding Technology courses leading to an A.S. Degree or Certificate. This class prepares the student for AWS Qualification Tests in the use of stick electrodes and inert gas processes. Students will need to purchase some safety equipment.

SECTION C - Conditions on Enrollment

Open Entry/Open Exit
No

Repeatability
Not Repeatable

Grading Options
Letter Grade or Pass/No Pass

Allow Audit
Yes

Requisites

Prerequisite(s)
Completion of WELD-240 with a minimum grade of C.

Requisite Justification

Requisite Description
Course in a Sequence

Subject
WELD
Course #
240

Level of Scrutiny
Content Review

Upon entering this course, students should be able to:
Completion of WELD-240 with a minimum grade of C.

SECTION D - Course Standards

Is this course variable unit?
No

Units
7.00

Lecture Hours
54.00

Lab Hours
216.00

Outside of Class Hours
108

Total Contact Hours
270

Total Student Hours
378

Distance Education Approval

Is this course offered through Distance Education?
Yes

Online Delivery Methods

DE Modalities	Permanent or Emergency Only?
Hybrid	Emergency Only

SECTION E - Course Content

Student Learning Outcomes

	Upon satisfactory completion of the course, students will be able to:
1.	Demonstrate mastery of open root pipe welding (SMAW) in 1G and 2G positions.
2.	Successfully prepare for and pass AWS qualification tests.
3.	Plan, design, and fabricate a project from blueprint to finished weld.

Course Objectives

	Upon satisfactory completion of the course, students will be able to:
1.	Work safely by knowing and practicing good safety and personal work habits.
2.	Identify the nomenclature of electrodes, gases, and other supplies of the welding discipline.
3.	Demonstrate a professional degree of skill in setting in setting up and using welding equipment for oxyacetylene, SMAW, GMAW, FCAW, and GTAW.
4.	Identify materials and joint designs, and prepare materials for welding operations.
5.	Pass AWS Qualification tests with stick electrodes and semi-automatic processes.
6.	Design, draft, fabricate and weld a project.

Course Content

1. Review of Knowledge, Skill Improvement
    a. Safety
    b. Materials
        i. Ferrous and non-ferrous materials
        ii. Properties and strengths of metals
        iii. Identification of metals
    c. Related subjects
    d. Materials
    e. Preparing and finishing materials
2. Supplementary
    a. Application forms
    b. Personal appearance and attitudes
    c. Unions
    d. Codes and laws
    e. Employee responsibilities
    f. Employer responsibilities
    g. Trade ethics
3. Application
    a. Design project
    b. Draft project

   c. Develop materials list and time estimate
   d. Fabricate and weld project
4. Research paper
   a. Developing theme
   b. Researching area of welding
   c. Write and edit paper
5. AWS Qualification Tests
   a. Identify test requirements
   b. Set-up welding process to specified parameters
   c. Perform Qualification Test

Methods of Instruction

Methods of Instruction

Types	Examples of learning activities
Observation and Demonstration	Techniques for open-root pipe welding and AWS exam criteria.
Experiments	Students fabricate a custom weldment from start to finish.
Individualized Instruction	Timed practice sessions simulating AWS testing conditions.

Online Adaptation

Types	Examples of learning activities
Lecture	AWS standard walkthroughs and digital score sheets.
Individualized Instruction	Self-recordings of technique for instructor feedback.

Instructor-Initiated Online Contact Types

Announcements/Bulletin Boards
Discussion Boards
E-mail Communication
Telephone Conversations
Video or Teleconferencing

Student-Initiated Online Contact Types

Discussions

Course design is accessible

No

Methods of Evaluation

Methods of Evaluation

Types	Examples of classroom assessments
Exams/Tests	Students will be given a mid-term and final examination. Example: tests comprised of multiple choice, identification, short answer and T/F questions.
Other	Students will complete weekly lab assignments. Example: place a root, filler and cap welds on an eight-inch pipe with E7018 electrodes in the 2G position.

Assignments

Reading Assignments

1. Students will be required to read selections from their textbook and handouts in order to understand essential concepts.

Example: Section on Variables in Welding Fabrication, *Lincoln Electric*, textbook.

2. Students will be required to read selections from their textbook and lecture notes in order to perform lab exercises.

Example: place a root, filler and cap welds on an eight-inch pipe with E7018 electrodes in the 2G position.

Writing Assignments

1. Students will prepare a project which will include: drafting the project, creating a materials list, establishing a time estimate, and fabricating the project.

2. Students will identify, analyze and formulate corrective actions to pass Qualification Tests.

Outside-of-Class Assignments

1. Each student shall research a topic of their choosing, complete a three-page report and give an oral presentation to the class.
2. Each student will design and fabricate a project utilizing a sketch or print and appropriate welding procedures, then perform a visual inspection and critique per given standards.

SECTION F - Textbooks and Instructional Materials

Material Type
Textbook

Author
Lincoln Electric

Title
Lincoln Electric Procedure Handbook of Arc Welding

Edition/Version
13th

Publisher
Lincoln Electric

Year
1994

Rationale
Golden Standard

Material Type
Textbook

Author
Lincoln Electric

Title
Metals and How to Weld Them

Edition/Version
10th

Publisher
Lincoln Electric

Year
1990

Rationale
Golden Standard

Material Type
Textbook

Author
Bridigum

Title
How To Weld

Edition/Version
1st

Publisher
Motorbooks

Year
2008

Rationale
Golden Standard

ISBN #
978-0760331743

Material Type
Textbook

Author
B.J. Moniz

Title
Welding Skills

Edition/Version
5th

Publisher
American Technical Publishers, Inc

Year
2015

Rationale
Golden Standard

ISBN #
978-0826930842

Material Type
Other required materials/supplies

Description
1. Gauntlet style welding gloves.
2. Combination Square 6" and 12".
3. Tape measure 16' minimum.

SECTION G - Diversity, Equity and Inclusivity

How does your course and/or course outline of record reflect strategies for accommodating and engaging diverse student populations, advancing equitable outcomes, and fostering inclusion for all students?
To foster equity, the course includes extra prep time for certification, opportunities to revise projects, and scaffolding for students with limited test experience. All students have a pathway to success through diverse assessment formats and personalized coaching.

Course Codes (Admin Only)

CB00 State ID
CCC000593623

CB10 Cooperative Work Experience Status
N - Is Not Part of a Cooperative Work Experience Education Program

CB11 Course Classification Status
Y - Credit Course

CB13 Special Class Status
N - The Course is Not an Approved Special Class

CB23 Funding Agency Category
Y - Not Applicable (Funding Not Used)

CB24 Program Course Status
Program Applicable

Allow Pass/No Pass
Yes

Only Pass/No Pass
No