WELD-240: WELDING TECHNOLOGY 3

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
240

Department
Welding Technology

Division
Career Education and Workforce Development (CEWD)

Full Course Title
Welding Technology 3

Short Title
Welding Technology 3

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

The third semester of Welding Technology continues with the advancement of welding skills in all areas. The study of joint design, materials, layout, symbols, metallurgy, material identification is expanded; material preparation and finishing, including patination is introduced.

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-100 or WELD-120 with a minimum grade of C.

Requisite Justification

Requisite Description

Course Not in a Sequence

Subject

WELD

Course #

120

Level of Scrutiny

Content Review

Upon entering this course, students should be able to:

Student will demonstrate knowledge and ability to work safely with electric arc welding equipment; oxyacetylene equipment and welding shop tool

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Requisite Description

Course Not in a Sequence

Subject

WELD

Course #

100

Level of Scrutiny

Content Review

Upon entering this course, students should be able to:

Student will demonstrate knowledge and ability to work safely with electric arc welding equipment; oxyacetylene equipment and welding shop tool

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Requisite Description

Course Not in a Sequence

Subject
WELD
Course #
130

Level of Scrutiny
Content Review

Upon entering this course, students should be able to:
Student will demonstrate knowledge and ability to work safely with electric arc welding equipment; oxyacetylene equipment and welding shop tool

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	Permanent

SECTION E - Course Content

Student Learning Outcomes

	Upon satisfactory completion of the course, students will be able to:
1.	Perform advanced welds using SMAW, GTAW, GMAW, and FCAW on various metals and joint designs.
2.	Apply basic welding metallurgy principles to select procedures for specific materials.
3.	Conduct basic destructive and non-destructive weld testing.

Course Objectives

	Upon satisfactory completion of the course, students will be able to:
1.	Demonstrate knowledge of and practice safe work and personal habits.
2.	Demonstrate professional mastery of the tools, machines and equipment of welding.

3.	Examine and identify the nomenclature of electrodes, gases and other supplies of the welding field.
4.	Identify materials, joint designs, and prepare materials.
5.	Perform trade standard skills in setting up and using welding equipment of oxyacetylene, SMAW, GMAW, FCAW, and GTA.
6.	Demonstrate increased knowledge of procedures, processes and techniques in welding.

Course Content

1. Review of Knowledge, Skill Improvement
   a. Safety
   b. Cutting processes
      i. Manual and machine oxyacetylene and other gases
      ii. Electric arc cutting: Air arc and electrode cutting
      iii. Cutting nozzles and gas pressures
   c. Oxyacetylene welding, brazing and heat treating
      i. Oxyacetylene and braze welding
      ii. Brazing and soldering
      iii. Hard surfacing
      iv. Heating and flame treating
   d. Electric arc welding with stick electrodes
      i. Machines and equipment
      ii. Polarity – straight and reverse
      iii. Nomenclature of electrodes and coating
      iv. Preparation of metals for welding
      v. Starting and setting machines; striking and maintaining the arc
      vi. Running the basic bead
      vii. Flat, horizontal, vertical and overhead welding with various electrodes
   e. Gas shielded arc welding (GMAW, FCAW and GTAW)
      i. Machines and equipment
      ii. Shielding gases
      iii. Filler metal and preparation of materials
      iv. Arc transfer
      v. Current (high frequency, constant potential, variable potential)
   f. Materials
      i. Ferrous and non-ferrous materials
      ii. Properties and strengths of metals
      iii. Identification of metals
   g. Related subjects
   h. Preparing and finishing materials
2. Other Welding Processes Theory
   a. Forge welding
   b. Thermit welding
   c. Electron beam welding
   d. Laser welding
   e. Induction welding
   f. Explosive welding
   g. Friction welding
   h. Resistance welding
   i. Electro slag welding
3. Inspecting and Testing
   a. Theory and use of testing apparatus and equipment
   b. Testing techniques
   c. Evaluation by visual appearance
   d. Destructive testing
   e. Non-destructive testing
   f. Types of coupons
   g. Chemical analyzing

Methods of Instruction

Methods of Instruction

Types	Examples of learning activities
Lecture	Conceptual lessons on metallurgy and heat-affected zones.
Lab	Multi-process welding across complex joints and varied materials.
Observation and Demonstration	In-lab practice of destructive and non-destructive evaluation.

Online Adaptation

Types	Examples of learning activities
Lecture	Digital animations and case studies.
Discussion	Students submit test designs and review peer plans.

Instructor-Initiated Online Contact Types

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

Student-Initiated Online Contact Types

Discussions

Course design is accessible

Yes

Methods of Evaluation

Methods of Evaluation

Types	Examples of classroom assessments
Exams/Tests	Students will be given written weekly tests covering assigned reading and weekly lectures. Example: tests comprised of multiple choice and T/F questions.
Lab Activities	Students will be given a mid-term and final examination. Example: tests comprised of multiple choice, identification, short answer and T/F questions.

Assignments

Reading Assignments

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

Example: Section on Welding Medium Carbon Steel, 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 fillet weld on a T plate with a 2% ceriated electrode in the 4G position.

Writing Assignments

1. Students will be required to write-up lab assignments.

Example: List three corrective measures that may be taken to reduce heat distortion.

2. Students will be required to formulate corrective actions while welding.

Example: Correctly adjusting machine settings to achieve the proper bead profile.

3. Students will interpret welds to formulate corrective action.

Example: Determine possible changes in setting parameters and/or technique to avoid undercut and cold lap.

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
B.J. Moniz

Title
Welding Skills

Edition/Version
5th

Publisher
American Technical Publishers, Inc

Year
2015

Rationale
Golden Standard

ISBN #
978-0826930842

Material Type
Textbook

Author
Lincoln Electric

Title
Metals and How to Weld

Edition/Version
2nd

Publisher
Lincoln Electric

Year
1990

Rationale
Golden Standard

Material Type
Textbook

Author
Althouse, Turnquist, Bowditch, Bowditch, & Bowditch

Title
Modern Welding

Edition/Version
10th

Publisher
Goodheart-Wilcox

Year
2004

Rationale
Golden Standard

Material Type
Other required materials/supplies

Description
Safety glasses and gauntlet style welding gloves.

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?
All students are supported with multiple ways to demonstrate learning—via hands-on, visual, and written assessments. Welding test plans are peer-reviewed in small groups to create community and ensure all voices are heard. Supplementary content is offered for students who need extra review or context.

Course Codes (Admin Only)

CB00 State ID
CCC000288805

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