

WELD-150: METAL FABRICATION 1

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

150

Department

Welding Technology

Division

Career Education and Workforce Development (CEWD)

Full Course Title

Metal Fabrication 1

Short Title

Metal Fabrication 1

CB03 TOP Code

0956.50 - *Welding Technology

CIP Code

45.0508

CB08 Basic Skills Status

NBS - Not Basic Skills

CB09 SAM Code

C - Clearly 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

Course in metal fabrication techniques to improve employable skills of the vocational technical student. Will include safety, the understanding and use of blueprints, use and care of tools, layout from blueprints, use of materials handbooks, hand-on fabrication of various projects, and joining 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-100 or WELD-120 with a minimum grade of C.

Requisite Justification

Requisite Description

Course 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 tools.

Requisite Description

Course 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 tools.

SECTION D - Course Standards

Is this course variable unit?

No

Units

3.00000

Lecture Hours

36

Lab Hours

54

Outside of Class Hours

72

Total Contact Hours

90

Total Student Hours

162

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. Accurately interpret and apply blueprints and welding symbols to fabrication projects.
2. Use layout, measurement, and fit-up techniques to construct metal projects.
3. Apply appropriate welding and joining processes to meet project specifications.
4. Collaborate effectively in a team-based welding shop to complete complex fabrication projects safely and efficiently.

Course Objectives

Upon satisfactory completion of the course, students will be able to:

1. Demonstrate skill in interpretation of blueprints.
2. Demonstrate ability to develop materials list.
3. Demonstrate ability to layout materials.
4. Use materials handbooks.
5. Demonstrate ability to set-up jigs and fixtures.
6. Demonstrate appropriate use and care of tools.
7. Demonstrate skill in fabrication techniques.
8. Demonstrate understanding of craftsmanship.

Course Content

1. Introduction
 - a. Orientation
 - b. Trade safety review

- c. Terms and definitions
- d. Job economics and approaches
- 2. Tools and Supplies
 - a. Economic factors in tool, accessory and supply selection
 - b. Appropriate use of power and hand tools
 - c. Maintenance and repair cost factors
- 3. Blueprints
 - a. Title block
 - b. Visualization and interpretation
 - c. Notes and specs
 - d. Bill of materials
 - e. Dimensioning: fractional, metric, decimal, etc.
 - f. Symbols
 - g. Views: plan, sectional, elevation, isometrics
 - h. Sketches
- 4. Material preparation, Flame cutting
 - a. Check measurements
 - b. Economic factors in process choice
 - c. Planning: how, when, where and why
 - d. Edge preparation (cold surface) and measurement check
 - e. Refer to specification and check
- 5. Fabrication techniques
 - a. Planning: how, when, where, why
 - b. Use of reference lines
 - c. Safety procedures
 - d. Use of jigs, fixtures and bracing
 - e. Tool selection
 - f. Sequence of fit-up
 - g. Predetermined sequence of material handling
 - h. Proper tacking
- 6. Fabrication assessment
 - a. Supplementary layout of reference lines
 - b. Pre-planning of sub-assembly
 - c. Component assessment (measurement check)
 - d. Final assessment
 - e. Dimensional check
- 7. Joining processes
 - a. Economics of process selection
 - b. Welding sequences
 - c. Intermittent welding and dimensional inspection
 - d. Final welding
 - e. Weld defects
 - f. Pick-up and clean-up

Methods of Instruction

Methods of Instruction

| Types | Examples of learning activities |
|-------------------------------|---|
| Lecture | Sequential instruction in measurement, layout, cutting, and assembly. |
| Observation and Demonstration | Sequential instruction in measurement, layout, cutting, and assembly. |

Online Adaptation

| Types | Examples of learning activities |
|------------|--|
| Activity | The only outcomes the online area would cover are the general industry knowledge. Interactive visuals for layout and blueprint walkthroughs. |
| Discussion | Students post project planning updates with visual check-ins. |

Instructor-Initiated Online Contact Types

Announcements/Bulletin Boards
 Chat Rooms
 Discussion 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 a mid-term and final examination. Example: tests comprised of multiple choice, identification, short answer and T/F questions. |
| Skills Demonstration | Students will design, draft, fabricate and critique a project. Example: fabrication of a table. |

Assignments**Reading Assignments**

1. Students will read selections from textbooks.

Example: Practice in Reading Shop Drawings, Lincoln Electric, textbook.

2. Students will read handouts and materials handbooks.

Example: students will demonstrate ability to set-up jigs and fixtures according to procedures listed in handouts and handbooks.

Writing Assignments

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

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

2. Students will interpret welds to formulate corrective action.

Example: determine possible changes in setting parameters and/or technique to deal with poor fit-up.

Outside-of-Class Assignments

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

John R.Walker W. Richard Polanin

Title

Welding Print Reading

Edition/Version

8th

Publisher

Goodheart-Willcox

Year

2023

ISBN #

9781685845728

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?

Instruction integrates scaffolded learning with visual and kinesthetic tools to meet diverse student needs. Assignments allow for different approaches to fabrication planning, and lab pacing is adjusted to ensure equitable access to tools and instructor guidance.

Course Codes (Admin Only)

CB00 State ID

CCC000522951

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