WELD-150: METAL FABRICATION 1

Effective Term
Fall 2023

CC Approval
11/18/2022

AS Approval
11/22/2022

BOT Approval
12/15/2022

COCI Approval
5/18/2023

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 (WELD)

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

CB08 Basic Skills Status
NBS - Not Basic Skills

CB09 SAM Code
C - Clearly Occupational

Rationale
Updating to remove MATH-90 and MATH-94 and recommended advisories; remove references to repeatability in course description. Other fields carried over from existing COR in CurricUNET.

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-120 or WELD-100 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	Emergency Only

SECTION E - Course Content

Student Learning Outcomes

	Upon satisfactory completion of the course, students will be able to:
1.	Identify and recognize hazards associated with a welding environment utilizing Oxy-Fuel, SMAW, GMAW, GTAW, PAC, and CAC-A
2.	Apply the use of Personal Protective Equipment (PPE)
3.	Apply common terminology related to safety
4.	Works cooperatively with others in shop setting
5.	Set up SMAW, GTAW, GMAW equipment for welding mild steel, stainless steel and aluminum with appropriate electrodes
6.	Recognize and explain visual defects in an electric arc weld
7.	Identify and use the appropriate process and fabricating techniques for a project
8.	Accurately interpret a blueprint

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	Lectures with white board and computer presentations
Observation and Demonstration	Visual laboratory demonstrations of welding techniques
Lab	Hands-on laboratory activities

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)

Other 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
6th

Publisher
Goodheart-Willcox

Year
2013

Material Type
Textbook

Author
Lincoln Electric

Title
How to Read Shop Drawings

Edition/Version
2nd

Publisher
Lincoln Electric

Year
2008

Material Type
Other required materials/supplies

Description
Safety glasses and gauntlet style welding gloves.

Proposed General Education/Transfer Agreement

Do you wish to propose this course for a Local General Education Area?
No

Do you wish to propose this course for a CSU General Education Area?
No

Do you wish to propose this course for a UC Transferable Course Agreement (UC-TCA)?
No

Course Codes (Admin Only)

ASSIST Update
No

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