

WELD123 : Occupational Welding III

General Information

Author:	<ul style="list-style-type: none">Curtis G Potter
Course Code (CB01) :	WELD123
Course Title (CB02) :	Occupational Welding III
Department:	WELD
Proposal Start:	Spring 2025
TOP Code (CB03) :	(0956.50) Welding Technology
CIP Code:	(48.0508) Welding Technology/Welder.
SAM Code (CB09) :	Clearly Occupational
Distance Education Approved:	No
Will this course be taught asynchronously?:	No
Course Control Number (CB00) :	CCC000548746
Curriculum Committee Approval Date:	05/22/2024
Board of Trustees Approval Date:	07/16/2024
Last Cyclical Review Date:	05/22/2024
Course Description and Course Note:	WELD 123 is third in a series of occupational welding courses designed to prepare the student for employment in the welding industry. It covers basic preparation for welding certification, advanced shielded metal arc welding (SMAW), tungsten inert gas, metal inert gas, and oxyacetylene welding, including specific welding exercises needed to prepare the student for the manipulative phase of the certification examination.
Justification:	Mandatory Revision
Academic Career:	<ul style="list-style-type: none">Credit
Mode of Delivery:	
Author:	Curtis G Potter
Course Family:	

Academic Senate Discipline

Primary Discipline:	<ul style="list-style-type: none">Welding
Alternate Discipline:	No value
Alternate Discipline:	No value

Course Development

Basic Skill Status (CB08)

Course is not a basic skills course.

Allow Students to Gain Credit by Exam/Challenge

Course Special Class Status (CB13)

Course is not a special class.

Pre-Collegiate Level (CB21)

Not applicable.

Grading Basis

- Grade with Pass / No-Pass Option

Course Support Course Status (CB26)

Course is not a support course

General Education and C-ID

General Education Status (CB25)

Not Applicable

Transferability

Transferable to CSU only

Transferability Status

Approved

Units and Hours

Summary

Minimum Credit Units (CB07) 3

Maximum Credit Units (CB06) 3

Total Course In-Class (Contact) Hours 126

Total Course Out-of-Class Hours 36

Total Student Learning Hours 162

Credit / Non-Credit Options

Course Type (CB04)

Credit - Degree Applicable

Noncredit Course Category (CB22)

Credit Course.

Noncredit Special Characteristics

No Value

Course Classification Code (CB11)

Credit Course.

Variable Credit Course

Funding Agency Category (CB23)

Not Applicable.

Cooperative Work Experience

Education Status (CB10)

Weekly Student Hours

	In Class	Out of Class
Lecture Hours	1	2
Laboratory Hours	6	0
Studio Hours	0	0

Course Student Hours

Course Duration (Weeks)	18
Hours per unit divisor	0
Course In-Class (Contact) Hours	
Lecture	18
Laboratory	108
Studio	0

Total 126

Course Out-of-Class Hours

Lecture	36
Laboratory	0
Studio	0
Total	36

Time Commitment Notes for Students

No value

Units and Hours - Weekly Specialty Hours

Activity Name	Type	In Class	Out of Class
No Value	No Value	No Value	No Value

Pre-requisites, Co-requisites, Anti-requisites and Advisories

Prerequisite

WELD122 - Occupational Welding II (in-development)

Objectives

- Communicate in written form the alphabet of American Welding Society welding symbols as used on blueprints pertaining to welders.
- Demonstrate proficiency in advanced oxy-fuel and shielded metal arc welding of heavy steel plate in all positions.
- Analyze a welding blueprint to determine the factors necessary to achieve a sound weldment.
- Critique and evaluate weldments after proper destructive testing procedures have been implemented.
- Articulate the process of material acquisition, design, cast, layout, and fabrication of a specified weldment.

Entry Standards

Entry Standards

Course Limitations

Cross Listed or Equivalent Course

Specifications

Methods of Instruction

Methods of Instruction Lecture

Methods of Instruction Laboratory

Methods of Instruction Multimedia

Methods of Instruction Demonstrations

Out of Class Assignments

- Write an essay describing the process used to complete final project
- Final project (e.g. flat weld on a tee joint)
- Peer-analyze welding assignments

Methods of Evaluation

Exam/Quiz/Test

Exam/Quiz/Test

Rationale

Comprehensive written examinations at end of each unit

Analysis of welding assignments, with more emphasis placed on the soundness and aesthetics of welds, by consistent testing of the welds applicable to the certification test

Textbook Rationale

No Value

Textbooks

Author	Title	Publisher	Date	ISBN
Bowditch, William A.	Welding Fundamentals	Goodheart-Willcox	2022	978-1-64564-693-8

Other Instructional Materials (i.e. OER, handouts)

No Value

Materials Fee

No value

Learning Outcomes and Objectives

Course Objectives

Perform certification standard weldments in the welding process of their choice with emphasis on shielded metal arc welding, flux cored arc welding, or tungsten inert gaswelding.

Critique and evaluate weldments after proper destructive or non-destructive testing procedures have been implemented.

Demonstrate a working knowledge of all the welding processes taught in the shop that apply to a viable job skill.

Visually determine if correct or incorrect welding procedures or manipulations were conducted on specific weldments, and what counter-measures if any would bring it up to code.

Communicate in writing, steps necessary to fabricate a part from conception to completion.

SLOs

Apply and use working knowledge of all welding processes while showing good safety practices.

Expected Outcome Performance: 70.0

ILOs
Core ILOs

Analyze and solve problems using critical, logical, and creative thinking; ask questions, pursue a line of inquiry, and derive conclusions; cultivate creativity that leads to innovative ideas.

Demonstrate depth of knowledge in a course, discipline, or vocation by applying practical knowledge, skills, abilities, theories, or methodologies to solve unique problems.

WELD
Welding - A.S. Degree
Major

complete introductory and advanced level welding projects using various techniques and procedures.

demonstrate the skills necessary to read engineering drawings, solve technical mathematics problems as they relate to welding tasks.

WELD
Welding - Certificate

complete introductory and advanced level welding projects using various techniques and procedures.

demonstrate the skills necessary to read engineering drawings, solve technical mathematics problems as they relate to welding tasks.

Perform visual inspection to complete sound weldments.

Expected Outcome Performance: 70.0

ILOs
Core ILOs

Analyze and solve problems using critical, logical, and creative thinking; ask questions, pursue a line of inquiry, and derive conclusions; cultivate creativity that leads to innovative ideas.

Demonstrate depth of knowledge in a course, discipline, or vocation by applying practical knowledge, skills, abilities, theories, or methodologies to solve unique problems.

WELD
Welding - A.S. Degree
Major

complete introductory and advanced level welding projects using various techniques and procedures.

demonstrate the skills necessary to read engineering drawings, solve technical mathematics problems as they relate to welding tasks.

WELD
Welding - Certificate

complete introductory and advanced level welding projects using various techniques and procedures.

demonstrate the skills necessary to read engineering drawings, solve technical mathematics problems as they relate to welding tasks.

Conduct destructive self-testing on completed weld plates.

Expected Outcome Performance: 70.0

<i>ILOs</i> Core ILOs	Analyze and solve problems using critical, logical, and creative thinking; ask questions, pursue a line of inquiry, and derive conclusions; cultivate creativity that leads to innovative ideas.
	Demonstrate depth of knowledge in a course, discipline, or vocation by applying practical knowledge, skills, abilities, theories, or methodologies to solve unique problems.
<i>WELD</i> Welding - Certificate	complete introductory and advanced level welding projects using various techniques and procedures. demonstrate the skills necessary to read engineering drawings, solve technical mathematics problems as they relate to welding tasks.
<i>WELD</i> Welding - A.S. Degree Major	complete introductory and advanced level welding projects using various techniques and procedures. demonstrate the skills necessary to read engineering drawings, solve technical mathematics problems as they relate to welding tasks.

Course Content

Lecture Content

Background on Certification Procedures (18 hours)

- Preparing for test, types of certification, fees, etc.
- Locations of testing facilities

Total hours: 18

Laboratory/Studio Content

Oxyacetylene Welding (40 hours)

- Single vee butt, ¼" plate, flat position
- Single vee butt, ½" plate multiple passes
- Lap weld ¼" plate Fillet weld ¼" plate,
- tee joint Single vee ¼" plate, backhand method
- Single vee butt ¼" plate, vertical Single vee butt ¼" plate,
- horizontal Single vee butt ¼" plate, overhead 9.
- Braze weld single vee, ¼" plate Braze weld lap joint, ¼" plate;
- Braze weld tee joint, ¼" plate
- Braze weld cast iron
- Fusion weld cast iron
- Pipe layout
- Welding pipe in roll and fixed position
- O/A welding aluminum, 1/8" plate

Metallic Arc Welding – Advanced (38 hours)

- Running a pad, E6010, E7018, E7024
- Lap weld ½" steel, multiple passes, E6010
- Tee joint ½" steel, multiple passes, E6010
- Repeat numbers 2 and 3 in vertical position uphill using E6010, E7018
- Closed square butt 1/8" steel E6010, in flat, vertical, and horizontal positions
- Open square butt ¼" steel E6010, flat, vertical, and horizontal positions
- Closed single vee butt 1/8" steel E6010, flat, vertical, and horizontal positions
- Open single vee butt ¼" steel E6010, flat, vertical, and horizontal positions.
- Open single vee butt ½" steel E6010, flat, vertical, and horizontal positions.
- Construct a cross and fill same with E6010, E6013, E7018, E7024 in horizontal fillet position
- Same as #10, in vertical position
- Continue welding different assigned joints in flat, vertical and horizontal positions.

Advanced T.I.G. Welding (30 hours)

- Advanced T.I.G. applications in flat position
- Welding aluminum
- Welding magnesium
- Welding high carbon steel

Total hours: 108

Additional Information

Is this course proposed for GCC Major or General Education Graduation requirement? If yes, indicate which requirement in the two areas provided below.

No

GCC Major Requirements

No Value

GCC General Education Graduation Requirements

No Value

Repeatability

Not Repeatable

Justification (if repeatable was chosen above)

No Value

Resources

Did you contact your departmental library liaison?

Yes

If yes, who is your departmental library liaison?

Adina Lerner (Technology & Aviation, Visual & Performing Arts)

Did you contact the DEIA liaison?

Yes

Were there any DEIA changes made to this outline?

No

If yes, in what areas were these changes made:

No Value

Will any additional resources be needed for this course? (Click all that apply)

- No

If additional resources are needed, add a brief description and cost in the box provided.

No Value