

## WELD118 : General Welding

### General Information

Author:	<ul style="list-style-type: none"><li>Curtis G Potter</li></ul>
Course Code (CB01) :	WELD118
Course Title (CB02) :	General Welding
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) :	CCC000547307
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 118 consists of theory and techniques in basic Shielded Metal Arc Welding (SMAW) and Flux Cored Arc Welding. The student is given experience in applying the principles by individual practice on a sequence of selected plates and manipulative exercises on mild steel.
Justification:	Mandatory Revision
Academic Career:	<ul style="list-style-type: none"><li>Credit</li></ul>
Mode of Delivery:	
Author:	Curtis G Potter
Course Family:	

### Academic Senate Discipline

Primary Discipline:	<ul style="list-style-type: none"><li>Welding</li></ul>
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)** 2**Maximum Credit Units (CB06)** 2**Total Course In-Class (Contact) Hours** 72**Total Course Out-of-Class Hours** 36**Total Student Learning Hours** 108**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**

	<b>In Class</b>	<b>Out of Class</b>
Lecture Hours	1	2
Laboratory Hours	3	0
Studio Hours	0	0

**Course Student Hours**

<b>Course Duration (Weeks)</b>	18
<b>Hours per unit divisor</b>	0
<b>Course In-Class (Contact) Hours</b>	
Lecture	18
Laboratory	54
Studio	0
<b>Total</b>	72

**Course Out-of-Class Hours**

Lecture	36
Laboratory	0
Studio	0
<b>Total</b>	<b>36</b>

### 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

WELD117 - Introduction To Welding (in-development)

#### Objectives

- Perform oxy-fuel welding in all positions and oxy-fuel cutting and brazing, plasma arc cutting.
- Evaluate and critique the finished welding exercises.
- Perform destructive and non-destructive testing on specific weld joints done in all positions.
- Communicate a working knowledge of the use of general shop equipment such as: band saw, drill press, metal cutting shears, radiograph cutter, pedestal and portable grinders, electricwire brush, and various hand tools.
- Identify and apply safety precautions involved in the proper use of oxy-fuel and related equipment;

### 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

- Lab simulations
- Written assignments
- Homework assignments

### Methods of Evaluation

### Rationale

Exam/Quiz/Test

Five regularly scheduled one-hour examinations

Exam/Quiz/Test

One two-hour final examination (written and objective)

Exam/Quiz/Test

Twenty-one regularly scheduled practical tests for each area covered in class-lab section

### 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 shielded metal arc welding and flux cored arc welding of heavy plate.

Complete the proper testing sequence of electric grinding, coupon cutting, and destructive root bend testing of the weld samples.

Critique and evaluate the finished exercises.

Write a materials list and complete a sketch for an optional final project.

Communicate a working knowledge of the use of general shop tools.

### SLOs

**Utilize welding safety and avoid practices that could pose a danger to others.**

Expected Outcome Performance: 70.0

<i>ILOs</i> Core ILOs	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.
<i>WELD</i> Welding - A.S. Degree Major	complete introductory and advanced level welding projects using various techniques and procedures.

**Demonstrate set-up and adjust settings on welding machines.**

Expected Outcome Performance: 70.0

<i>ILOs</i> Core ILOs	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.
<i>WELD</i> Welding - A.S. Degree Major	complete introductory and advanced level welding projects using various techniques and procedures.

**Perform flat welding position using ARC/MIG processes in completing class exercises.**

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.

WELD  
Welding - Certificate

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

WELD  
Welding - A.S. Degree  
Major

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

## Additional SLO Information

**Does this proposal include revisions that might improve student attainment of course learning outcomes?**

No

**Is this proposal submitted in response to learning outcomes assessment data?**

No

**If yes was selected in either of the above questions for learning outcomes, explain and attach evidence of discussions about learning outcomes.**

No Value

**SLO Evidence**

No Value

## Course Content

### Lecture Content

#### Electric Welding (6 hours)

- Definition, classification of welding by arc
- Polarity, arc blow, and problems in resistance welding
- AC and DC arc welders
- Color identification of rods
- Stress relief, inspection
- Types of welded joints
- Maintenance of welders

#### Thermit Welding (3 hours)

- Definition – reaction of thermit
- Procedures, outfit

#### Unionmelt Welding (3 hours)

- Developed and uses of unionmelt welding

#### Resistance Welding Application (3 hours)

- Air operated spot, mechanical techniques
- Types and uses

#### Gas Welding of Pipe (3 hours)

- Joint preparation, cutting and beveling
- Position welds, vertical, backing plates
- Spacing tables

**Total hours: 18**

### Laboratory/Studio Content

#### Welding Pressure Vessels (4 hours)

- Procedures, techniques of checking

#### Welding Aluminum (6 hours)

- Commercial methods, arc, inert, metallic
- Oxyacetylene and oxy-hydrogen
- Resistance, spot, soldering (hard and soft)

**Welding Copper (6 hours)**

- Kind of copper to use
- Methods, acetylene, arc, inert-arc

**Welding Brass and Bronze (5 hours)**

- Procedure, yellow brass, machine brass

**Airplane Welding (5 hours)**

- Welding processes
- Oxyacetylene welding procedure

**Ultrasonic Weld Inspection (6 hours)**

- Explanation of the methods, sound cycles, reflections, testing
- A.B. and C. scans, frequency modulated flaw detection systems

**Surface Hardening (5 hours)**

- Definition
- Quenching, steels, hardening operation, various methods
- Equipment

**Hard Facing (4 hours)**

- Oxyacetylene procedure, electric arc procedures
- Hardness of deposit

**Study of High Frequency Induction Heating (4 hours)**

- Resistance produces heat, heating units Types of indicating heating, high frequency application

**A.W.S. standard welding symbols (3 hours)**

- Standard location of elements of a welding symbol
- General provision, location of symbols dimensioning

**Metals (3 hours)**

- Study of 26 basic metals used in the metals industry
- Physical properties
- Testing and identification of the metals

**Use of Testing Equipment (3 hours)**

- Rockwell, its application to Brinnell
- Hardness, tensile strengths, etc.

**Total hours: 54**

## 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