

WELD122 : Occupational Welding II

General Information

Author:	<ul style="list-style-type: none">Curtis G Potter
Course Code (CB01) :	WELD122
Course Title (CB02) :	Occupational Welding II
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) :	CCC000548747
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 122 is second in a series of occupational welding courses designed to prepare the student for employment in the welding industry. It covers fundamental of blueprint reading interpreting shop drawings and sketches, advanced shielded metal arc welding (SMAW) and oxyacetylene welding and provides an introduction to tungsten inert gas and metal inert gas arc welding.
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

WELD121 - Occupational Welding I (in-development)

Objectives

- Perform manipulative skills in oxy-fuel welding, cutting, brazing, and shielded metal arc welding, and plasma arc cutting.
- Demonstrate a working knowledge of oxy-fuel, welding and cutting equipment, shielded metal arc welding equipment, plasma arc cutting equipment and their theories.
- Critique and evaluate weldments after properly performing a series of destructive tests on the samples.
- Demonstrate proper safety precautions in the use of oil oxy-fuel and shielded metal arc welding equipment.
- Write and compile a general welding notebook to be used as a reference guide for related classes.
- Show a general knowledge of basic metallurgy, welding terms and metal identification.

OR

Prerequisite

WELD117 - Introduction To Welding (in-development)

Objectives

- Perform oxy-fuel welding in all positions and oxy-fuel cutting and brazing, plasma arc cutting.
- Identify and apply safety precautions involved in the proper use of oxy-fuel and related equipment.
- Evaluate and critique the finished welding exercises.

AND

Prerequisite

WELD118 - General Welding (in-development)

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.

Entry Standards

Entry Standards

Course Limitations

Cross Listed or Equivalent Course

Specifications

Methods of Instruction

Methods of Instruction	Lecture
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Methods of Instruction	Guest Speakers
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Methods of Instruction	Demonstrations
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Methods of Instruction	Multimedia
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Methods of Instruction	Laboratory
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Out of Class Assignments

- Written homework assignments
- Write an essay describing the process used to complete final project
- Final project (e.g. weld beads on a plate using ARC/MIG processes)

Methods of Evaluation

Rationale

Exam/Quiz/Test	Quizzes
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Other	Homework
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Exam/Quiz/Test	Examination at the end of each instructional mode
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Exam/Quiz/Test	Final examination
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Project/Portfolio	Final project (e.g. surfacing pad of weld beads on a plate surface)
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Textbook Rationale

No Value

Textbooks

Author	Title	Publisher	Date	ISBN
Walker, John R.	Welding Print Reading	Goodheart-Willcox	2020	978-1-63563-681-9

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

No Value

Materials Fee

No value

Learning Outcomes and Objectives

Course 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.

SLOs

Perform working with others safely being an effective and dependable team member.

Expected Outcome Performance: 70.0

ILOs
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.

Practice ethical and responsible behavior within personal, academic, professional, social, and societal contexts; recognize and welcome diverse lifestyle choices that promote physical, intellectual, psychological, and social well-being.

WELD
Welding - A.S.
Degree Major

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

WELD
Welding -
Certificate

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

<i>ILOs</i> Core ILOs	Communicate clearly, ethically, and creatively; listen actively and engage respectfully with others; consider situational, cultural, and personal contexts within or across multiple modes of communication.
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	Demonstrate depth of knowledge in a course, discipline, or vocation by applying practical knowledge, skills, abilities, theories, or methodologies to solve unique problems.
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<i>WELD</i> Welding - A.S. Degree Major	discuss metallurgical concepts, heat treating procedures, and machine tool technology concepts.
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<i>WELD</i> Welding - Certificate	discuss metallurgical concepts, heat treating procedures, and machine tool technology concepts.
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Identify American Welding Society symbols used in welding blueprints.

Expected Outcome Performance: 70.0

<i>ILOs</i> Core ILOs	Communicate clearly, ethically, and creatively; listen actively and engage respectfully with others; consider situational, cultural, and personal contexts within or across multiple modes of communication.
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	Demonstrate depth of knowledge in a course, discipline, or vocation by applying practical knowledge, skills, abilities, theories, or methodologies to solve unique problems.
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<i>WELD</i> Welding - A.S. Degree Major	demonstrate the skills necessary to read engineering drawings, solve technical mathematics problems as they relate to welding tasks.
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<i>WELD</i> Welding - Certificate	demonstrate the skills necessary to read engineering drawings, solve technical mathematics problems as they relate to welding tasks.
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Course Content

Lecture Content

Welding Symbols (18 hours)

- Location of element in symbols
- Examples of welding symbols
- Dimensioning (alphabet of lines)
- Basic blueprint reading

Total hours: 18

Laboratory/Studio Content

Basic Measurement Procedures (8 hours)

- Shop math
- Pipe joint layout

Metallurgy (5 hours)

- Effects of carbon in iron
- Effects of alloys

Hardfacing (5 hours)

- Definition and applications
- Methods: metallic arc, oxy-acetylene
- Hardness of deposit

Surface Hardening (7 hours)

- Definition and applications
- Methods of quenching steel
- Hardening operations
- Equipment used

Oxy-Acetylene Welding (22 hours)

- Overhead welding
- Pipe welding
 - Roll position
 - Stationary position
- Braze welding
 - Vee groove
 - Cast iron
 - Aluminum
- Silver Brazing
 - Copper
 - Stainless steel
- Hard facing
- Fusion welding cast iron

Metallic Arc Welding (40 hours)

- Using electrodes E6010, E7018
- Vertical position welding
 - Stringer beads and wash pass
 - Butt, tee, lap joints
 - Vee grooves
 - Cutting coupons and testing welds
- Horizontal Position
- Pipe Welding
 - Pipe to plate fillet
 - Vee groove and square groove welding on pipe
- Cast iron welding
 - Machineable welds
 - Non-machineable welds

Introduction to T.I.G. Process (21 hours)

- Machines and processes
- Setting up, securing
- Welding beads in flat position on mild steel, aluminum

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?

No

If yes, who is your departmental library liaison?

No Value

Did you contact the DEIA liaison?

No

Were there any DEIA changes made to this outline?

No Value

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 Value

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

No Value