

Course Outline

COURSE: WELD 701 **DIVISION:** 90 **ALSO LISTED AS:**

TERM EFFECTIVE: Fall 2019

CURRICULUM APPROVAL DATE: 11/13/2018

SHORT TITLE: BEG WELDING

LONG TITLE: Beginning Welding

<u>Units</u>	<u>Number of Weeks</u>	<u>Type</u>	<u>Contact Hours/Week</u>	<u>Total Contact Hours</u>
0	18	Lecture:	1	18
		Lab:	3	54
		Other:	0	0
		Total:	4	72

Out of Class Hrs: 36.00

Total Learning Hrs: 108.00

COURSE DESCRIPTION:

This course is an introduction to Shielded Metal Arc Welding (SMAW), Gas Metal Arc Welding (GMAW), Oxy Acetylene Welding (OAW) and Oxy Fuel Cutting (OFC) and Plasma Arc Cutting (PAC) of steel materials. Content includes safe practices, equipment use, metal identification, and basic practices in metal repair and maintenance.

PREREQUISITES:

COREQUISITES:

CREDIT STATUS: N - Non Credit

GRADING MODES

N - Non Credit

REPEATABILITY: N - Course may not be repeated

SCHEDULE TYPES:

02 - Lecture and/or discussion

03 - Lecture/Laboratory

04A - Laboratory - LEH 0.65

STUDENT LEARNING OUTCOMES:

1. Demonstrate and describe proper safety practices when working in a welding environment.

Measure of assessment: demonstration, exam, discussion

Year assessed, or planned year of assessment: 2019

Semester: Fall

Institution Outcome Map

1. Communication:

1.1 Students will communicate effectively in many different situations, involving diverse people and viewpoints.

1.2 Speaking: Students will speak in an understandable and organized fashion to explain their ideas, express their feelings, or support a conclusion.

1.3 Listening: Students will listen actively and respectfully to analyze the substance of others' comments.

1.4 Reading: Students will read effectively and analytically and will comprehend at the college level.

1.5 Writing: Students will write in an understandable and organized fashion to explain their ideas, express their feelings, or support a conclusion.

2. Cognition:

2.1 Students will think logically and critically in solving problems; explaining their conclusions; and evaluating, supporting, or critiquing the thinking of others.

2.2 Analysis and Synthesis: Students will understand and build upon complex issues and discover the connections and correlations among ideas to advance toward a valid independent conclusion.

2.3 Problem Solving: Students will identify and analyze real or potential problems and develop, evaluate, and test possible solutions, using the scientific method where appropriate.

2.4 Creative Thinking: Students will formulate ideas and concepts in addition to using those of others.

2.5 Quantitative Reasoning: Students will use college-level mathematical concepts and methods to understand, analyze, and explain issues in quantitative terms.

2.6 Transfer of Knowledge and Skills to a New Context: Students will apply their knowledge and skills to new and varied situations.

7. Content Specific:

Apply integrated knowledge with incremental skill improvement resulting in functional application of welding techniques.

Measure of assessment: exam, skill demonstration

Year assessed, or planned year of assessment: 2019

Semester: Fall

Institution Outcome Map

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CONTENT, STUDENT PERFORMANCE OBJECTIVES, OUT-OF-CLASS ASSIGNMENTS

Curriculum Approval Date: 11/13/2018

Lecture 18 hours, Lab 54 hours

3 Hours

Content: Introduction, Safety

Student Performance Objectives: List items that are manufactured using various welding processes. Sketch the various types of welding machinery. Explain why welding curtains are used in a welding environment. Discuss the various pieces of safety equipment that should be used. Describe why it is important to read and understand the manufacturer's safety and operating instructions on any piece of equipment.

4 Hours

Content: Shielded Metal Arc Welding (SMAW) - Equipment, Setup, and Operation

Student Performance Objectives: Describe the process of SMAW. Describe safe SMAW work practices. List and define the three units used to measure a welding current. Explain how adding various chemicals to the coverings of the electrodes affects the welding arc. Describe the three different types of current used for welding and their effects on welds. Define open circuit voltage and operating voltage. State the purpose of a rectifier. List three characteristics of the weld bead that can be controlled by the movement or weaving of the welding electrode. Match various SMAW electrodes to the four filler metal groups. Define stringer beads and tell how they are used.

3 Hours

Content: Oxy Fuel Cutting (OFC), Plasma Arc Cutting (PAC), Oxy Acetylene Welding (OAW) - Equipment, Setup, and Operation

Student Performance Objectives: Describe the equipment and material needed. Explain how to light and extinguish a torch safely. Discuss how to safely set the working pressure on a regulator. Explain the different methods of cutting.

3 Hours

Content: Gas Metal Arc Welding (GMAW) - Equipment, Setup, and Operation

Student Performance Objectives: Describe how to safely set up the GMAW equipment. Explain how to safely thread the GMAW wire into the equipment. Explain how to make stringer beads. Describe how to weld butt, lap, and tee joints. Explain the axial spray metal transfer process.

3 Hours

Content: Flux Cored Arc Welding (FCAW) ? Equipment, Setup, and Operation

Student Performance Objectives: Identify the various components of FCAW. Describe the process of FCAW. List safe FCAW work practices. List four negative effects caused by an improper gun angle. State the effect on a weld if one increases or decreases electrode extension. List three limitations to the FCAW process. Explain why it is often possible with the FCAW process to make welds without having to bevel the edge of the plate. List the two elements used as the basis for most FCAW fluxes. Explain why it is important to remove the slag from a weld bead before the parts are painted.

2 Hours

METHODS OF INSTRUCTION:

Lecture, discussion, guided practice

OUTSIDE OF CLASS ASSIGNMENTS:

Required Outside Hours: 18

Assignment Description: Read textbook and study for exams.

Required Outside Hours: 18

Assignment Description: Complete workbook exercises.

METHODS OF EVALUATION

Problem-solving assignments

Percent of total grade: 40.00 %

Lab Projects

Writing assignments

Percent of total grade: 10.00 %

Lab Manuals

Skill demonstrations

Percent of total grade: 40.00 %

Lab Projects

Objective examinations

Percent of total grade: 10.00 %

Quizzes/Exams

REPRESENTATIVE TEXTBOOKS:

Larry Jeffus, Lawrence Bower. *Welding Skills, Processes and Practices for Entry-Level Welders*. New York: Delmar, Cengage Learning, 2016.

ARTICULATION and CERTIFICATE INFORMATION

Associate Degree:

CSU GE:

IGETC:

CSU TRANSFER:

Not Transferable

UC TRANSFER:

Not Transferable

SUPPLEMENTAL DATA:

Basic Skills: N

Classification: J

Noncredit Category: J

Cooperative Education:

Program Status: 1 Program Applicable

Special Class Status: N

CAN:

CAN Sequence:

CSU Crosswalk Course Department:

CSU Crosswalk Course Number:

Prior to College Level: Y

Non Credit Enhanced Funding: Y

Funding Agency Code: A

In-Service: N

Occupational Course: C

Maximum Hours:

Minimum Hours:

Course Control Number: CCC000602603

Sports/Physical Education Course: N

Taxonomy of Program: 095650