WELD 71 Course Outline as of Fall 2013

CATALOG INFORMATION

Dept and Nbr: WELD 71 Title: WELDING BASICS: INTERM
Full Title: Welding Basics: Intermediate
Last Reviewed: 3/12/2012

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	2.00	Lecture Scheduled	1.00	17.5	Lecture Scheduled	17.50
Minimum	2.00	Lab Scheduled	3.00	6	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		Contact Total	4.00		Contact Total	70.00
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 35.00 Total Student Learning Hours: 105.00

Title 5 Category:	AA Degree Applicable
Grading:	Grade Only
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	WELD 70B

Catalog Description:
All-position arc welding, certifications, heli-arc, M.I.G. and fabrication techniques. Emphasis on projects and repairs.

Prerequisites/Corequisites:
Course Completion of WELD 70

Recommended Preparation:
Eligibility for ENGL 100 or ESL 100

Limits on Enrollment:

Schedule of Classes Information:
Description: All-position arc welding, certifications, heli-arc, M.I.G. and fabrication techniques. Emphasis on projects and repairs. (Grade Only)
Prerequisites/Corequisites: Course Completion of WELD 70
Recommended: Eligibility for ENGL 100 or ESL 100
Limits on Enrollment:
Transfer Credit: CSU;
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**			Effective:	Inactive:
CSU GE:	**Transfer Area**			Effective:	Inactive:
IGETC:	**Transfer Area**			Effective:	Inactive:
CSU Transfer:	Transferable	Effective:	Fall 1981	Inactive:	Fall 2018
UC Transfer:		Effective:		Inactive:	

CID:

Certificate/Major Applicable:
Certificate Applicable Course

COURSE CONTENT

Outcomes and Objectives:
Upon completion of this course, the student will be able to:
1. Demonstrate the ability to carry out safe welding practices.
2. Identify the five basic types of welding joints.
3. Prepare a sample of cast iron for welding.
4. Set up and place in operation arc, oxy-acetylene, gas tungsten and gas metal arc welding equipment.
5. Demonstrate air arc principles.
6. Identify filler metals by American Welding Society (A.W.S.D.) specifications.
7. Demonstrate welding in flat, horizontal and vertical postions.
8. Prepare plates for certification test in accordance with A.W.S.D. 1.1 structure code.
9. Describe the metal surfacing processing.
10. Discuss the reasons for preheating in welding.
11. Assemble gas tungsten/gas metal arc welding equipment for welding.
12. Identify common sheilding gasses for welding mild steel, stainless steel and aluminum with the gas metal arc welding process.
13. Demonstrate ability to weld in all positions with shielded metal arc, gas metal arc.

Repeating students will:
1. Demonstrate greater technical achievement in one or more welding techniques.
2. Perform welds with higher standards of appearance and strength.
3. Demonstrate greater skill in controlling molten metal.

Topics and Scope:

I. Shielded Metal Arc
   A. Arc welding safety
   B. Fillet welds, flat position
   C. Fillet welds, vertical position
   D. Single V-butt joints, flat, horizontal, and vertical positions
   E. Welding cast iron
   F. Hardfacing

G. Manipulative practice

II. Oxy-Acetylene
- A. Oxy-acetylene safety
- B. Butt and lap joints, horizontal position
- C. Butt and lap joints, vertical position
- D. Brazing cast iron
- E. Case hardening
- F. Hardfacing
- G. Automatic flame cutting
- H. Preheating and post-heating
- I. Manipulative practice

III. Gas Metal Arc (MIG)
- A. Mig safety
- B. Power sources
- C. Shielding gases
- D. Wire feeders
- E. Guns and barrels
- F. Consumable wire
- G. Manipulative practice

IV. Gas Tungsten Arc Welding (TIG)
- A. Tig safety
- B. Power sources
- C. Torches
- D. Sheilding gases
- E. Tungsten electrodes
- F. Metal preparation
- G. Filler rod
- H. Manipulative practice

V. Air Arc Cutting
- A. Arc cutting safety
- B. Equipment
- C. Carbon electrodes
- D. Machine settings
- E. Manipulative practice

VI. Flame Cutting
- A. Flame cutting safety
- B. Manual
- C. Automatic
- D. Torches and tips
- E. Gas pressure settings
- F. Torch manipulation
- G. Manipulative practice

VII. Metal Surfacing
- A. Wear problems
- B. Material selection
- C. Process selection
- D. Metal spraying
- E. Case hardening

VIII. Plasma Arc Cutting
- A. Plasma arc cutting safety
- B. Power source
- C. Torches and nozzles

D. Cutting gases metals
E. Ferrous and nonferrous metals
F. Cutting techniques

IX. With Repeat
A. Greater technical achievement in one or more welding techniques
B. Welds with higher standards of appearance and strenght
C. Greater skill in controlling molten metal

Assignment:

1. Weekly reading assignments, 10-15 pages per week (including handouts developed by instructor and from manufacturers).
2. Regular quizzes based on reading.
3. Welding skills assignments and performance exams.
4. Homework problems, including safety handouts.
5. Midterm; final exam.

With repeat:
1. Skill demonstrations: greater technical achievement in one or more welding techniques.
2. Skill demonstrations: perform welds with higher standards of appearance and strength.
3. Skill demonstrations: greater skill in controlling molten metal.

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because skill demonstrations are more appropriate for this course.	Writing 0 - 0%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Homework problems (handouts).	Problem solving 10 - 20%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Welding skills assignments and performance exams.	Skill Demonstrations 50 - 60%

Exams: All forms of formal testing, other than skill performance exams.

Quizzes and final exam: Multiple choice, True/false, Matching items, Completion	Exams 10 - 20%

Other: Includes any assessment tools that do not logically fit into the above categories.

Attendance	Other Category 0 - 10%

Representative Textbooks and Materials:
Jeffus, Larry et al. Welding Skills, Processes and Practices for Entry-Level Welders. Delmar Cengage Learning, 2009.
Instructor prepared materials