WELD 75B Course Outline as of Summer 2009

CATALOG INFORMATION

Dept and Nbr: WELD 75B Title: WELDING TECHNOLOGY 2
Full Title: Welding Technology 2
Last Reviewed: 10/28/2013

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	6.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	6.00	Lab Scheduled	9.00	17	Lab Scheduled	157.50
		Contact DHR	0		Contact DHR	0
		Contact Total	12.00		Contact Total	210.00
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00 Total Student Learning Hours: 315.00

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:	

Catalog Description:
Advanced welding processes and fabrication techniques for welding and related trades. Includes SMAW (shielded metal arc welding), MIG (metal inert gas), TIG (tungsten inert gas), and Innershield welding. Students gain skills required to pass the Unlimited American Welding Society Structural Certification Test.

Prerequisites/Corequisites:
Course Completion of WELD 175A (or WELD 75A)

Recommended Preparation:

Limits on Enrollment:

Schedule of Classes Information:
Description: Advanced welding processes and fabrication techniques for welding and related trades. Includes SMAW, MIG, TIG, and Innershield welding. Students gain skills required to pass the Unlimited American Welding Society Structural Certification Test. (Grade Only)
Prerequisites/Corequisites: Course Completion of WELD 175A (or WELD 75A)
Recommended:

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 2014
UC Transfer:		Effective:		Inactive:	

CID:

Certificate/Major Applicable:
Certificate Applicable Course

COURSE CONTENT

Outcomes and Objectives:
1. Safely use tools and operate equipment used in the welding trade for advanced fabrication techniques.
2. Demonstrate a high level of skill in the use of TIG (Tungsten Inert Gas), MIG (Metal Inert Gas), SMAW (Shielded Manual Arc Welding), cutting and gouging.
3. Fabricate advanced projects to the standard of industry.
4. Interpret blueprints for increasingly complex projects.
5. Demonstrate the skills required to pass an unlimited American Welding Society Structural Certification Test (SMAW, MIG, TIG, Innershield using unlimited metal thicknesses and flat, horizontal, vertical, and overhead positions).

Topics and Scope:

I. Shielded Metal Arc Welding (SMAW)
   A. Fillet welds, flat position
   B. Fillet welds, vertical position
   C. Single V-butt joints, flat, horizontal, and vertical positions
   D. Welding cast iron
   E. Hardfacing
   F. Welding electrodes in all positions
II. Oxy-Acetylene
   A. Butt and lap joints, horizontal position
   B. Butt and lap joints, vertical position
   C. Brazing cast iron
   D. Case hardening
   E. Automatic flame cutting
   F. Preheating and post-heating

III. Gas Metal Arc (MIG)
- A. Welding ferrous and non-ferrous metals
- B. Power sources
- C. Shielding gases
- D. Wire feeders
- E. Guns
- F. Consumable wire

IV. Gas Tungsten Arc Welding (TIG)
- A. Power sources
- B. Torches
- C. Shielding gases
- D. Tungsten preparation
- E. Metal preparation
- F. Filler rod

V. Air Arc Cutting
- A. Equipment
- B. Carbon electrodes
- C. Machine settings

VI. Flame Cutting
- A. Manual
- B. Automatic
- C. Machine settings

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

VIII. Plasma Arc Cutting
- A. Power source
- B. Torch and nozzles
- C. Cutting gases
- D. Ferrous and nonferrous metals
- E. Cutting techniques

IX. A.W.S. Certification Test
- A. Prepare plates
- B. Weld (SMAW or MIG)
- C. Prepare test samples
- D. Bend coupons

X. Fabrication Techniques
- A. Tacking
- B. Weld direction
- C. Shrinkage
- D. Distortion prevention and control

XI. Blueprint Reading
- A. Print interpretation
- B. Creating a project blueprint

Assignment:

1. Reading: approximately 10-20 pages per week.
2. Complete chapter reviews and homework problems.

3. Notebook including lecture/demonstration notes and handouts.
4. Skill demonstrations: weekly welding samples and fabrication techniques using SMAW, MIG, TIG, and Innershield welding processes, unlimited metal thicknesses, and unlimited positions.
5. Welding projects (5-10). Using a given number of pieces of metal and a given process, fabricate project in a specified amount of time.
6. Quizzes (1-3).
7. Final fabrication project: demonstration of skill and proficiency in all processes. Students may complete a project of their own choosing that will demonstrate proficiency in all processes.

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.

Chapter reviews	Writing 5 - 10%

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

Homework problems	Problem solving 5 - 10%

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

Performance exams, Samples; projects; final fabrication project	Skill Demonstrations 50 - 60%

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

Multiple choice, True/false, Completion, Short answer	Exams 10 - 20%

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

Attendance and participation; notebook	Other Category 0 - 15%

Representative Textbooks and Materials:
Modern Welding Technology. Howard B. Cary. Prentice Hall, 2004.
Instructor prepared materials.