WELD 241 - Welding Technology 4 Course Outline

Approval Date: 05/10/2018
Effective Date: 08/13/2018

SECTION A

Unique ID Number	CCC000593623
Discipline(s)	Welding
Division	Career Education and Workforce Development
Subject Area	Welding
Subject Code	WELD
Course Number	241
Course Title	Welding Technology 4
TOP Code/SAM Code	0956.50 - Welding Technology/Welder* / B - Advance Occupational
Rationale for adding this course to the curriculum	Class hours need to increase
Units	7
Cross List	*N/A*
Typical Course Weeks	18

Total Instructional Hours

	Contact Hours
Lecture	54.00
Lab	216.00
Activity	0.00
Work Experience	0.00
Outside of Class Hours	108.00

Total Contact Hours	270
Total Student Hours	378
Open Entry/Open Exit	No
Maximum Enrollment	20
Grading Option	Letter Grade or P/NP
Distance Education Mode of Instruction	

SECTION B

General Education Information:

SECTION C

Course Description

Repeatability May be repeated 0 times

Catalog Description This is the capstone class of Welding Technology and applies the manipulative skills of welding with fabricating techniques. The student will be required to use the skills developed by drafting a project, prepare a materials list, time estimate, and then amount of time to fabricate the project. This is the fourth semester in a series of Welding Technology courses leading to an A.S. Degree or Certificate. This class prepares the student for AWS Qualification Tests in the use of stick electrodes and inert gas processes. Students will need to purchase some safety equipment.

Schedule Description

SECTION D

Condition on Enrollment

1a. Prerequisite(s)

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- WELD 240 with a minimum grade of c or better

1b. Corequisite(s): *None*

1c. Recommended: *None*

1d. Limitation on Enrollment: *None*

SECTION E

Course Outline Information

1. Student Learning Outcomes:

A. Apply the use of Personal Protective Equipment (PPE)
B. Apply common terminology related to safety
C. Works cooperatively with others in shop setting
D. Perform open root pipe welding with SMAW in 1G and 2G positions.
E. Successfully perform AWS Qualification tests with stick electrodes and semi-automatic processes

2. Course Objectives: Upon completion of this course, the student will be able to:

A. Work safely by knowing and practicing good safety and personal work habits
B. Identify the nomenclature of electrodes, gases, and other supplies of the welding discipline.
C. Demonstrate a professional degree of skill in setting in setting up and using welding equipment for oxyacetylene, SMAW, GMAW, FCAW, and GTAW
D. Identify materials, joint design, and prepare materials
E. Pass AWS Qualification tests with stick electrodes and semi-automatic processes
F. Design, draft, fabricate and weld a project
G.

3. Course Content

A. Review of Knowledge, Skill Improvement
    a. Safety
    b. Materials
        a. Ferrous and non-ferrous materials
        b. Properties and strengths of metals
        c. Identification of metals
    c. Related subjects
    d. Materials
    e. Preparing and finishing materials
B. Supplementary

a. Application forms
b. Personal appearance and attitudes
c. Unions
d. Codes and laws
e. Employee responsibilities
f. Employer responsibilities
g. Trade ethics

C. Application
a. Design project
b. Draft project
c. Develop materials list and time estimate
d. Fabricate and weld project

D. Research paper
a. Developing theme
b. Researching area of welding
c. Write and edit paper

E. AWS Qualification Tests
a. Identify test requirements
b. Set-up welding process to specified parameters
c. Perform Qualification Test
d.

4. Methods of Instruction:

Activity:
Individualized Instruction:
Lab:
Lecture:
Projects:
Other: Lectures with white board and computer presentations Visual laboratory demonstrations of welding techniques Hands-on laboratory activities

5. Methods of Evaluation: Describe the general types of evaluations for this course and provide at least two, specific examples.

Typical classroom assessment techniques

Exams/Tests --
Quizzes --
Lab Activities --
Final Exam --
Mid Term --

Additional assessment information:

Students will complete weekly lab assignments. (example: place a root, filler and cap welds on an eight inch pipe with E7018 electrodes in the 2G position)
Students will be given a mid-term and final examination. (example: tests comprised of multiple choice, identification, short answer and T/F questions)

Letter Grade or P/NP

6. Assignments: State the general types of assignments for this course under the following categories and provide at least two specific examples for each section.

A. Reading Assignments
1. Students will be required to read selections from their textbook and handouts in order to understand essential concepts (example: section on Variables in Welding Fabrication, Lincoln Electric, textbook)

2. Students will be required to read selections from their textbook and lecture notes in order to perform lab exercises. (example: place a root, filler and cap welds on an eight inch pipe with E7018 electrodes in the 2G position)

B. Writing Assignments
1. Students will prepare a project which will include: drafting the project, creating a materials list, establishing a time estimate, and fabricating the project.
3. Students will identify, analyze and formulate corrective actions to pass Qualification Tests. (example: establish parameters to avoid "hot shortness"

C. Other Assignments
1. Each student shall research a topic of their choosing, complete a three page report and give an oral presentation to the class.
2. Each student will design and fabricate a project utilizing a sketch or print and appropriate welding procedures, then perform a Visual Inspection and critique per given standards.

7. Required Materials

A. EXAMPLES of typical college-level textbooks (for degree-applicable courses) or other print materials.

Book #1:
Author: Lincoln Electric
Title: Lincoln Electric Procedure Handbook of Arc Welding
Publisher: Lincoln Electric
Date of Publication: 1994
Edition: 13th

Book #2:
Author: Lincoln Electric
Title: Metals and How to Weld Them
Publisher: Lincoln Electric
Date of Publication: 1990
Edition: 10th

Book #3:
Author: Bridigum
Title: How To Weld
Publisher: Motorbooks
Date of Publication: 2008
Edition: 1st

Book #4:
Author: B.J. Moniz
Title: Welding Skills
Publisher: American Technical Publishers, Inc
Date of Publication: 2015
Edition: 5th

B. Other required materials/supplies.

- 1. Gauntlet style welding gloves.
  2. Combination Square 6" and 12".
  3. Tape measure 16' minimum.