WELD 120 - Welding Technology 1 Course Outline

Approval Date: 04/12/2018
Effective Date: 06/01/2018

SECTION A

Unique ID Number	CCC000592707
Discipline(s)	
Division	Career Education and Workforce Development
Subject Area	Welding
Subject Code	WELD
Course Number	120
Course Title	Welding Technology 1
TOP Code/SAM Code	0956.50 - Welding Technology/Welder* / C - Occupational
Rationale for adding this course to the curriculum	Course hours need revision
Units	7
Cross List	*N/A*
Typical Course Weeks	9

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 class provides a basis for all intermediate and advanced level courses.It is the first course of an extensive two-year program preparing the student for a

skilled job in the field of welding. Beginning with trade safety, it provides training in manipulative skills in all phases of oxygen-fuel gas cutting, stick electrodes in various joints and positions, introduces GMAW, PAC, CAC-A, and related theory. Students will need to purchase some safety equipment.

Schedule Description

SECTION D

Condition on Enrollment

1a. Prerequisite(s): *None*

1b. Corequisite(s): *None*

1c. Recommended: *None*

1d. Limitation on Enrollment: *None*

SECTION E

Course Outline Information

1. Student Learning Outcomes:

A. Identify and recognize hazards associated with a welding environment utilizing Oxy-Fuel, SMAW, GMAW, GTAW, PAC, and CAC-A
B. Apply the use of Personal Protective Equipment (PPE)
C. Apply common terminology related to safety
D. Safely work in a lab setting with many students working together
E. Explain basic theory of operation of OFW, OFC, and SMAW equipment
F. Set up SMAW equipment for welding mild steel with E6010 and E7018 electrodes
G. Perform SMAW welding in 1G, 2G, 3G and 4G positions.

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

A. Demonstrate and understand the effective and safe handling of oxy-fuel cutting equipment
B. Demonstrate mastery of basic manipulation techniques using E6010 electrodes
C. Select and identify mild steel electrodes by using the AWS numeral system
D. Exhibit proper weld techniques working in the flat and horizontal positions
E. Identify welding processes, their use and function
F. Perform out of position welding using E6010 electrodes
G. Perform welds using E7018 electrodes in flat and horizontal positions
H. Assemble and prepare various types of weld joints
I.

3. Course Content

BLOCK 1 – Orientation
Unit A: Classroom, shop area and its machines and tools
Unit B: Safety program and practices
Unit C: Shop Organization
Unit D: Testing and grading
Unit E: Personal conduct; attitudes and responsibilities
Unit F: General shop rules

BLOCK 2 – Occupational Appreciation 3 hours
Unit A: History and development of welding
Unit B: Economics of welding
Unit C: Moral and civic responsibilities
Unit D: Trade ethics

Unit E: Employer-employee relations and obligations
Unit F: Welding and the future

BLOCK 3 – Safety 18 hours
Unit A: Personal safety and habits
Unit B: Oxyacetylene safety
Unit C: Shop safety and rules
Unit D: Arc welding safety
Unit E: Safety devices; fire extinguishers, fire blankets, etc.
Unit F: General safety; grinders, hand tools, electrical, etc.
Unit G: Safety tests

BLOCK 4 – Cutting Processes 43 hours
Unit A: Safety
Unit B: Manual oxyacetylene and other gases
Unit C: Machine oxyacetylene and other gases
Unit D: Electric arc cutting, air arc and electrode cutting
Unit E: Cutting nozzles and gas pressures

BLOCK 5 – Electric Arc Welding with Stick Electrodes
Unit A: Safety
Unit B: Machines and equipment
Unit C: Polarity, straight and reverse
Unit D: Nomenclature of electrodes and coatings
Unit E: Preparation of metals for welding
Unit F: Starting and setting machines (voltage and amperage)
Unit G: Striking and maintaining the arc
Unit H: Running the basic beads
Unit I: Flat, horizontal, vertical and overhead welding with various electrodes
Unit J: Terminology, processes, procedures and techniques

4. Methods of Instruction:

Lab:

Lecture:

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 --
Final Exam --
Mid Term --

Additional assessment information:

Students will be given written weekly tests covering assigned reading and weekly lectures. (example: tests comprised of multiple choice and T/F questions)
Students will complete weekly lab assignments. (example: place a fillet weld on a T plate with an 1/8th" E6010 electrode in the 1G 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 in order to understand essential concepts (example: section on Shielded Metal Arc Welding, Althouse et.al., textbook)
   2. Students will be required to read selections from their textbook and lecture notes in order to perform lab exercises. (example: place a fillet weld on a T plate with an 1/8th" E6010 electrode in the 1G position)

B. Writing Assignments
   1. Students will be required to write-up lab assignments. (example: List three corrective measures that may be taken to prevent or reduce arc blow)
   2. Students will be required to formulate corrective actions while welding. (example: correctly adjusting machine settings to achieve the proper bead profile)
   3. Students will interpret welds to formulate corrective action. (example: determine possible changes in setting parameters and/or technique to avoid undercut and cold lap)

C. Other Assignments
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7. Required Materials

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

Book #1:

Author:	B.J. Moniz
Title:	Welding Skills
Publisher:	American Technical Publishers, Inc
Date of Publication:	2015
Edition:	Fifth

B. Other required materials/supplies.

- Safety glasses and gauntlet style welding gloves.