

DESE Model Curriculum

GRADE LEVEL/UNIT TITLE: 11-12/ OxyGas and Other Cutting/Welding Processes

Course Code:

COURSE INTRODUCTION:

This course utilizes welding in the development and construction of major metal and wood projects. (CD 016770, CIP 01.0201)

Agriculture encompasses the food, fiber, conservation and natural resource systems, employing over 20% of the nation's workforce. Advanced skills in welding, woodworking, and project construction provide students with entry-level agricultural construction skills.

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UNIT DESCRIPTION: Students learn proper safety and procedures for OxyGas and Cutting/Welding Processes, as well as proper procedures for oxyfuel processes. Students also learn to properly cut and welding utilizing the proper procedures.		SUGGESTED UNIT TIMELINE: 3 WEEKS CLASS PERIOD (min.): 50 MINUTES				
ESSENTIAL QUESTIONS: 1. What are the OxyGas and Cutting/Welding Process safety procedures and how do you apply them? 2. What is the correct set up, adjustment, and shut-down procedures for oxyfuel processes and why is it important? 3. How do you know the difference between a proper and improper cutting/welding procedure and cuts/welds?						
ESSENTIAL MEASURABLE LEARNING OBJECTIVES	CCSS LEARNING GOALS (Anchor Standards/Clusters)	CROSSWALK TO STANDARDS				
		GLEs/CLEs	PS	CCSS	AFNR Standards	DOK
1. List and demonstrate the safety procedures required for using oxy-acetylene equipment.				RST11-12.9 L11-12.6 SL11-12.4 WHST11-12.2	CS.06.03 CS.07.01 CS.07.04 CS.08.01 CS.08.02 CS.08.03 PST.01.03 PST.02.01	4

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					PST.02.02 PST.04.04.07.a PST.04.04.07.b PST.04.04.07.c	
2. Perform in order the complete procedure for lighting, adjusting the flame, and shutdown of the torch				RST11-12.9 L11-12.6 SL11-12.4	CS.06.03 CS.07.01 CS.07.04 CS.08.01 CS.08.02 CS.08.03 PST.01.03 PST.02.01 PST.02.02 PST.04.04.07.a PST.04.04.07.b PST.04.04.07.c	4
3. Select appropriate tip for the job to be performed.				RST11-12.9	CS.08.01 CS.08.02 CS.08.03 PST.02.01 PST.02.02 PST.04.04.07.a PST.04.04.07.b PST.04.04.07.c	2
4. Weld in all positions with oxy-gas welder.				G-CO-1 G-CO-6 G-CO-7 G-CO – 12 G-MG-1 G-MG-3 G-GMD-4 RST11-12.3 RST11-12.9	CS.06.03 CS.07.01 CS.07.04 CS.08.01 CS.08.02 CS.08.03 PST.01.03 PST.02.01 PST.02.02	2

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					PST.04.04.07.a PST.04.04.07.b PST.04.04.07.c	
5. Perform a “hardsurfacing” operation.				RST11-12.9 SL11-12.4	CS.06.03 CS.07.01 CS.07.04 CS.08.01 CS.08.02 CS.08.03 PST.01.03 PST.02.01 PST.02.02 PST.04.04.07.a PST.04.04.07.b PST.04.04.07.c	2
6. Weld cast iron using rod and flux.				G-CO-1 G-CO-6 G-CO-7 G-CO – 12 G-MG-1 G-MG-3 G-GMD-4 RST11-12.3 RST11-12.9	CS.06.03 CS.07.01 CS.07.04 CS.08.01 CS.08.02 CS.08.03 PST.01.03 PST.02.01 PST.02.02 PST.04.04.07.a PST.04.04.07.b PST.04.04.07.c	2
7. Perform a braze weld operation.				G-CO-1 G-CO-6 G-CO-7 G-CO – 12 G-MG-1 G-MG-3	CS.06.03 CS.07.01 CS.07.04 CS.08.01 CS.08.02 CS.08.03	2

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				G-GMD-4 RST11-12.9 SL11-12.4	PST.01.03 PST.02.01 PST.02.02 PST.04.04.07.a PST.04.04.07.b PST.04.04.07.c	
8. Perform cutting with oxy-gas.				RST11-12.9 SL11-12.4	CS.06.03 CS.07.01 CS.07.04 CS.08.01 CS.08.02 CS.08.03 PST.01.03 PST.02.01 PST.02.02 PST.04.04.07.a PST.04.04.07.b PST.04.04.07.c	2
9. Cut metal using plasma arc cutting processes.				G-CO-1 G-CO-6 G-CO-7 G-CO – 12 G-MG-1 G-MG-3 G-GMD-4 RST11-12.9	CS.06.03 CS.07.01 CS.07.04 CS.08.01 CS.08.02 CS.08.03 PST.01.03 PST.02.01 PST.02.02 PST.04.04.07.a PST.04.04.07.b PST.04.04.07.c	2
10. Apply principles of oxy-gas cutting and welding and other processes, such as air carbon-arc cutting and plasma-arc cutting,				G-CO-1 G-CO-6 G-CO-7	CS.06.03 CS.07.01 CS.07.04	4

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by using the equipment to perform welds and cuts, identifying welding and cutting equipment, and answering questions about related equipment and procedures				G-CO – 12 G-MG-1 G-MG-3 G-GMD-4 RST11-12.9 L11-12.6 SL11-12.4	CS.08.01 CS.08.02 CS.08.03 PST.01.03 PST.02.01 PST.02.02 PST.04.04.07.a PST.04.04.07.b PST.04.04.07.c	
<p>ASSESSMENT DESCRIPTIONS*: (Write a brief overview here. Identify Formative/Summative. Actual assessments will be accessed by a link to PDF file or Word doc.)</p> <p>Students will use the oxyacetylene, air carbon-arc, or plasma-arc outfit to perform a series of welds and cuts determined by the instructor. They will also identify parts of the welding and cutting equipment and answer questions about related equipment and procedures. This activity is modeled on the oxyacetylene portion of the Agricultural Mechanics Career Development Event.</p> <p>Assessment will be based on the ability to safely and correctly perform the assigned procedures and on the accuracy of responses to the identification and written assessment portions of the activity.</p> <p>*Attach Unit Summative Assessment, including Scoring Guides/Scoring Keys/Alignment Codes and DOK Levels for all items. Label each assessment according to the unit descriptions above (i.e., Grade Level/Course Title/Course Code, Unit #.)</p>						
Obj. #	INSTRUCTIONAL STRATEGIES (research-based): (Teacher Methods)					
1-10	1. Lecture on proper safety and cutting/welding procedures. Demonstrate proper procedures for students. Provide examples of proper and improper cuts/welds.					
Obj. #	INSTRUCTIONAL ACTIVITIES: (What Students Do)					
1-10	1. Students will engage in study questions in lessons 1 through 10.					
1-10	2. Students will complete “JS 2.1, Lighting, Adjusting, and Shutting Down the Torch”; “JS 4.1, Oxy-Acetylene Welds in the Flat					

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	Position”; “JS 4.2, Oxy-Acetylene Welding in the Horizontal Position”; “JS 4.3, Oxy-Acetylene Welding in the Vertical Position”; “JS 4.4, Oxy-Acetylene Welding in the Overhead Position”; “JS 5.1, Hardsurfacing With Oxy-Acetylene”; “JS 6.1, Welding Cast Iron”; “JS 7.1, Braze Welding”; “JS 8.1, Making Beveled Cuts”; “JS 8.2, Cutting Holes With Oxy-Gas”; “JS 9.1, Arc-Air Cutting”; and “JS 9.2, Plasma-Arc Cutting.”
	3. Additional activities that relate to the unit objective can be found under the heading “Other Activities” in the following locations: p. II-6 (1, 2, 3), p. II-12, p. II-26 (1, 2, 3), p. II-37 (1, 2), p. II-112 (2), and p. II-131 (2)
<p>UNIT RESOURCES: (include internet addresses for linking)</p> <ul style="list-style-type: none"> • <i>Agricultural Construction Volume II</i>. University of Missouri-Columbia, Instructional Materials Laboratory, 1989. • <i>Agricultural Construction Volume III</i>. University of Missouri-Columbia, Instructional Materials Laboratory, 2002. • American Welding Society. Accessed January 17, 2012, from http://www.aws.org/. • Hobart Institute of Welding Technology. Accessed January 17, 2012, from http://www.welding.org/. • Hypertherm, Inc. Accessed January 17, 2012, from http://www.hypertherm.com/. • Lincoln Electric. Accessed January 15, 2012, from http://www.lincolnelectric.com/. • Machinery & Vehicle Safety: Welding. National Ag Safety Database. Accessed April 27, 2012, from http://nasdonline.org/browse/229/welding.html • <i>Missouri CDE Handbook</i>. Accessed January 17, 2012, from http://www.dese.mo.gov/divcareered/ag_cde_guidelines.htm. • Missouri FFA Agricultural Mechanics Career Development Event. Accessed January 17, 2012, from http://web.missouri.edu/~pavt0689/statecon.html. • Victor. Thermadyne. Accessed April 27, 2012, from http://www.thermadyne.com/victor/resource-center/literature.html 	