

# Agricultural Science II

**Curriculum Guide:** *Agricultural Mechanics Unit for Agricultural Science II*

**Unit:** III. Oxyacetylene Welding

**Unit Objective:**

Students will apply principles of oxyacetylene welding by making basic welds with an oxyacetylene outfit as part of a class-wide contest.

**Show-Me Standards:** 2.5, CA3

**References:**

*Agricultural Mechanics Unit for Agricultural Science II*. University of Missouri-Columbia, Instructional Materials Laboratory, 2002.

American Welding Society. Accessed November 18, 2003, from <http://www.aws.org/>.

Hobart Institute of Welding Technology. Accessed November 17, 2003, from <http://www.welding.org/>.

Machinery Safety: Welding. National Ag Safety Database. Accessed November 17, 2003, from [http://www.cdc.gov/nasd/menu/topic/machinery\\_welding.html](http://www.cdc.gov/nasd/menu/topic/machinery_welding.html).

*Missouri CDE Handbook*. Accessed November 14, 2003, from [http://www.dese.mo.gov/divcareered/ag\\_cde\\_guidelines.htm](http://www.dese.mo.gov/divcareered/ag_cde_guidelines.htm).

Missouri FFA Agricultural Mechanics Career Development Event. Accessed November 19, 2003, from <http://web.missouri.edu/~pavt0689/statecon.html>.

Thermadyne. Victor. Accessed November 18, 2003, from <http://www.thermadyne.com/vec/index.asp?div=vec>.

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### **Instructional Strategies/Activities:**

- Students will engage in study questions in lessons 1 through 3.
- Students will complete AS 2.1, Running a Continuous Weld Pool With and Without Welding Rod; AS 2.2, Welding a Butt Joint in Flat Position Using Welding Rod; AS 2.3, Welding an Edge Weld in a Flanged Butt Joint Without Welding Rod; AS 2.4, Welding an Outside Corner Joint With and Without Welding Rod; AS 3.1, Running a Bead With Brazing Rod; and AS 3.2, Braze Welding an Outside Corner Joint in Mild Steel.
- Additional activities that relate to the unit objective can be found under the heading "Other Activities" in the following locations: p. III-5 (2, 3) and p. III-55.

### **Performance-Based Assessment:**

Students will be divided into groups. The groups will represent teams and will participate in a contest that is similar to the oxyacetylene competency portion of the Agricultural Mechanics Career Development Event. Each student will use an oxyacetylene outfit to make common welds presented in the unit and discussed in class.

Assessment will be based on the ability to safely and correctly make the assigned welds using the oxyacetylene outfit.

### Agricultural Mechanics Unit for Agricultural Science II Unit III—Oxyacetylene Welding Instructor Guide

The instructor should assign the performance-based assessment activity at the beginning of the unit. Students will work toward completing the activity as they progress through the unit lessons. The assessment activity will be due at the completion of the unit.

1. Use or adapt the activity sheets found in the unit to assess student competency at welding and braze welding with the oxyacetylene outfit. Review or supplement these activities as needed, based on student mastery of the procedures and equipment the students will be using. **NOTE: Students should only complete this performance-based activity if they have mastered all the relevant competencies and have the instructor's permission to perform the activity.**
2. For the performance-based assessment activity, have students apply the skills and procedures discussed in the unit by making basic welds with an oxyacetylene outfit as part of a class-wide contest.
3. Divide the class into groups and assign students a series of welding procedures to perform using the oxyacetylene outfit, such as welding a butt joint in flat position using welding rod, welding an outside corner joint with or without welding rod, and braze welding an outside corner joint in mild steel.
  - a. Each student should perform all of the assigned procedures.
  - b. Assign students welding procedures that they have mastered as part of the instructional activities for this unit.
4. This activity will help prepare students for the oxyacetylene portion of the Agricultural Mechanics Career Development Event.
  - a. Explain or review event guidelines as needed.
  - b. Refer to the *Missouri CDE Handbook* for guidelines regarding the Agricultural Mechanics Career Development Event. The *Missouri CDE Handbook* is available from the Missouri Department of Elementary and Secondary Education at [http://www.dese.mo.gov/divcareered/ag\\_cde\\_guidelines.htm](http://www.dese.mo.gov/divcareered/ag_cde_guidelines.htm).

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5. Have students perform the assigned welding procedures.
  - a. Performance in the oxyacetylene welding contest will determine the student's individual score.
  - b. Combine the individual scores of the group members to determine the team score for each group.
6. The final assessment score will be based on the ability to safely and correctly make the assigned welds using the oxyacetylene outfit.
7. Present an appropriate award to the high-scoring team and individual, if desired.
8. NOTE: If desired, this activity can be combined with the performance-based assessment activities from Unit II, Arc Welding, and Unit IV, Tool Sharpening and Reconditioning, to form a mini Agricultural Mechanics Career Development Event. To conduct a mini Agricultural Mechanics Career Development Event, maintain the same student groups for all of the performance-based assessment activities. An expanded score sheet is included at the end of each of these units that can be used to track individual and group performance in the mini CDE.
9. ADDITIONAL ACTIVITY: Create a display board using the students' work. Possible display board themes include the following: each student's best work using the oxyacetylene outfit, the best example of each type of procedure performed by the class, and the best work of the week.

**Agricultural Mechanics Unit for Agricultural Science II**  
**Unit III—Oxyacetylene Welding**  
**Student Handout**

1. The instructor will divide the class into groups and give you a series of oxyacetylene welding procedures to perform as part of a class-wide contest.
2. Your group will compete in the contest as a team.
3. Perform the assigned welds using the oxyacetylene outfit.
  - Wear appropriate safety equipment at all times.
  - Follow all assigned safety procedures. You can lose points for not following safety precautions and other assigned procedures.
  - Inspect the equipment, materials, and work area to ensure safe and correct operation.
  - Perform the welds using the assigned procedure.
  - Inspect your work.
  - Follow shutdown and cleanup procedures and return all equipment and materials to their assigned places.
  - Turn in your work to the instructor.
4. Your final assessment score will be based on your ability to safely and correctly make the assigned welds using the oxyacetylene outfit.



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Unit III—Oxyacetylene Welding  
Scoring Guide**

Name \_\_\_\_\_

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Assessment Area	Criteria	0 Points	1 Point	2 Points	3 Points	4 Points	Weight	Total
Positioning	Metal was properly positioned	Failed	Poor	Fair	Good	Excellent	X 5	
Filler Rod and Equipment Setting	Filler is appropriate for procedure and torch flame was properly adjusted	Failed	Poor	Fair	Good	Excellent	X 5	
Distortion	Welds are free of distortion	Failed	Poor	Fair	Good	Excellent	X 5	
Appearance	Weld beads are uniform	Failed	Poor	Fair	Good	Excellent	X 5	
Strength	Welds are strong and sound	Failed	Poor	Fair	Good	Excellent	X 5	
Safety and Work Habits	Student followed all safety precautions	Passed				Failed	X (-25)	Negative Points *
	Student followed all assigned procedures	Excellent	Good	Fair	Poor	Failed	X (-10)	Negative Points *
<b>TOTAL</b>								

Final Assessment Total \_\_\_\_\_/100 pts.  
\* Overall combined score cannot be lower than 0.

Comments:





## Agricultural Mechanics II Score Sheet

Team Members	Arc Welding	Oxyacetylene Welding	Tool Sharpening/ Reconditioning	Score
<b>Team A</b>				
				<b>Total:</b>
<b>Team B</b>				
				<b>Total:</b>
<b>Team C</b>				
				<b>Total:</b>
<b>Team D</b>				
				<b>Total:</b>
<b>Team E</b>				
				<b>Total:</b>
<b>Team F</b>				
				<b>Total:</b>

