

## Agriculture Construction Crosswalk

A crosswalk provides educators with a list of benchmark statements aligned to Common Core and national content area standards for a given course or program. The Missouri Agriculture Construction Crosswalk lists a sequence of content, organized into distinct units of instruction.

	Common Core Standards	National Standards (AFNR)	Activities	Enhancements
<b>A. Arc Welding</b>				
1. List and demonstrate the safety procedures for arc welding.	RST.11-12.7 SL.11-12.4			
2. Identify the various types of metals and their properties.	RST.11-12.7			
3. Prepare metals for welding by cutting, grinding, and/or cleaning.	RST.11-12.3 RST.11-12.7 G-CO-1 G-CO-6 G-CO-7 G-CO – 12 G-GMD-4 G-MG-1 G-MG-3			
4. Weld in all positions with stick welder [Shielded Metal Arc Welding].	G-CO-1 G-CO-6 G-CO-7 G-CO – 12 G-GMD-4 G-MG-1 G-MG-3 RST.11-12.3 RST.11-12.7			
5. Weld in all positions with MIG welder [Gas Metal Arc Welding].	G-CO.1 G-CO.6 G-CO.7			

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	G-CO.12 G-GMD.4 G-MG.1 G-MG.3 RST.11-12.3 RST.11-12.7			
6. Weld in all positions with TIG welder [Gas Tungsten Arc welding].	G-CO.1 G-CO.6 G-CO.7 G-CO.12 G-GMD.4 G-MG.1 G-MG.3 RST.11-12.3 RST.11-12.7			
7. "Hardsurface" areas where extensive wear may occur.	G-CO.1 G-CO.6 G-CO.7 G-CO.12 G-GMD.4 G-MG.1 G-MG.3 RST.11-12.3 RST.11-12.7			
8. Weld cast iron.	G-CO.1 G-CO.6 G-CO.7 G-CO.12 G-GMD.4 G-MG.1 G-MG.3 RST.11-12.3 RST.11-12.7			

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9. Weld pipe.	G-CO.1 G-CO.6 G-CO.7 G-CO.12 G-GMD.4 G-MG.1 G-MG.3 RST.11-12.3 RST.11-12.7			
10. Apply principles of arc welding by performing common welds, identifying welding equipment, and answering welding-related questions.	G-CO.1 G-CO.6 G-CO.7 G-CO.12 G-GMD.4 G-MG.1 G-MG.3 RST.11-12.3 RST.11-12.7 SL.11-12.4			
<b>B. Finishing</b>				
1. Prepare surfaces for finishing.	N-Q.1 N-Q.3 RST.11-12.3 RST.11-12.4 L.11-12.6			
2. Select the primer to use before painting the surface.	N-Q.1 N-Q.3 RST.11-12.3 RST.11-12.4 L.11-12.6			
3. Select the paint to use in the finishing operation.	N-Q.1 N-Q.3 RST.11-12.3 RST.11-12.4			
4. List the steps for cleanup after	RST.11-12.3			

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finishing operation is complete.	RST.11-12.4 L.11-12.6 WHST.11-12.2			
5. Apply principles of painting by preparing, priming, and finishing a project.	N-Q.1 N-Q.3 RST.11-12.3 RST.11-12.4 RST.11-12.9 L.11-12.6			
<b>C. Metals</b>				
1. Select metals by design and strength.	N-Q.1 N-Q.2 N-Q.3 RST.11-12.3 RST.11-12.4 RST.11-12.9 L.11-12.6			
2. Explain how construction metal is dimensioned.	N-Q.1 N-Q.2 N-Q.3 G-CO.6 G-CO.7 G-CO.12 G-MG.1 G-MG.3 G-GMD.4 RST.11-12.4 RST.11-12.9 L.11-12.6 SL.11-12.4			
3. Remove stress risers.	N-Q.1 N-Q.2 N-Q.3 G-CO.6 G-CO.7 G-CO.12			

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	G-MG.1 G-MG.3 G-GMD.4 RST.11-12.3 RST.11-12.4 L.11-12.6			
4. Identify common metal fasteners.	RST.11-12.4 RST.11-12.9 L.11-12.6			
5. Identify the hardness grade of a bolt.	N-Q.1 N-Q.2 N-Q.3 RST.11-12.4 RST.11-12.9 L.11-12.6			
6. Control heat distortion of metals.	L.11-12.6			
7. Assemble work using proper locks and fasteners.	N-Q.1 N-Q.2 N-Q.3 G-CO.6 G-CO.7 G-CO.12 G-MG.1 G-MG.3 G-GMD.4 RST.11-12.3 RST.11-12.4 RST.11-12.9 L.11-12.6			
8. Use heat to shape metals.	N-Q.1 N-Q.2 N-Q.3 G-CO.6 G-CO.7 G-CO.12 G-MG.1			

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	G-MG.3 G-GMD.4 RST.11-12.3 RST.11-12.4 RST.11-12.9 L.11-12.6			
9. Use tap and die set to do threading.	N-Q.1 N-Q.2 N-Q.3 G-CO.6 G-CO.7 G-CO.12 G-MG.1 G-MG.3 G-GMD.4 RST.11-12.3 RST.11-12.4 RST.11-12.9 L.11-12.6			
10. List steps used to control crystallization in tempering, annealing, hardening, wrinkle bending, normalizing, and welding.	N-Q.1 N-Q.2 N-Q.3 G-CO.6 G-CO.7 G-CO.12 G-MG.1 G-MG.3 G-GMD.4 RST.11-12.4 RST.11-12.9 L.11-12.6 WHST.11-12.2			
11. Apply basic metalworking skills by constructing an appropriate metalworking project.	N-Q.1 N-Q.2 N-Q.3 G-CO.6 G-CO.7			

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	G-CO.12 G-MG.1 G-MG.3 G-GMD.4 RST.11-12.3 RST.11-12.4 RST.11-12.9 L.11-12.6			
<b>D. Oxygas and Other Cutting</b>				
1. List and demonstrate the safety procedures required for using oxy-acetylene equipment.	RST.11-12.9 L.11-12.6 SL.11-12.4 WHST.11-12.2			
2. Perform in order the complete procedure for lighting, adjusting the flame, and shutdown of the torch.	RST.11-12.9 L.11-12.6 SL.11-12.4			
3. Select appropriate tip for the job to be performed.	RST.11-12.9			
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 RST.11-12.3 RST.11-12.9			
5. Perform a “hardsurfacing” operation.	RST.11-12.9 SL.11-12.4			
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			

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	G-GMD.4 RST.11-12.3 RST.11-12.9			
7. Perform a braze weld operation	G-CO.1 G-CO.6 G-CO.7 G-CO.12 G-MG.1 G-MG.3 G-GMD.4 RST.11-12.9 SL.11-12.4			
8. Perform cutting with oxy-gas.	RST.11-12.9 SL.11-12.4			
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 RST.11-12.9			
10. Apply principles of oxy-gas cutting and welding and other processes, such as air carbon-arc cutting and plasma-arc cutting, by using the equipment to perform welds and cuts, identifying welding and cutting equipment, and answering questions about related equipment and procedures.	G-CO.1 G-CO.6 G-CO.7 G-CO.12 G-MG.1 G-MG.3 G-GMD.4 RST.11-12.9 L.11-12.6 SL.11-12.4			
<b>E. Woodworking</b>				
1. Distinguish common woods used in agricultural construction.	RST.11-12.4 RST.11-12.9 L.11-12.6			



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2. Select the proper fastener for a specific job.				
3. List the actual and nominal dimensions of common construction lumber.	N-Q.1 N-Q.2 N-Q.3 RST.11-12.9 WHST.11-12.2			
4. Use hand woodworking tools.				
5. Use power woodworking tools.				
6. Select preservatives.				
7. Apply basic woodworking skills to make an appropriate woodworking project.	N-Q.1 N-Q.2 N-Q.3 G-CO.6 G-CO.7 G-CO.12 G-MG.1 G-MG.3 G-GMD.4 RST.11-12.3 RST.11-12.4 RST.11-12.9 L.11-12.6			
<b>F. Construction Project</b>				
1. List the safety procedures for project construction.	L.11-12.6 WHST.11-12.2			
2. Select project and design a project plan.	WHST.11-12.2			
3. Develop a bill of materials and a projected cost list.	N-Q.1 N-Q.2 N-Q.3			
4. List tools needed to complete a project and list safety precautions.	L.11-12.6 WHST.11-12.2			
5. Determine the time frame for completion of a project.				

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6. Interpret a project construction plan.	RST.11-12.2 RST.11-12.4 RST.11-12.9			
7. Lay out and prepare materials for cutting.				
8. Determine construction design for proper hitching and balancing.	G-CO.1 G-CO.6 G-CO.7 G-CO.12 G-GMD.4 G-MG.1 G-MG.3			
9. Determine construction design for legal specifications: width, length, weight, etc.	G-CO.1 G-CO.6 G-CO.7 G-CO.12 G-GMD.4 G-MG.1 G-MG.3			
10. Identify and correct project defects by approved methods.	G-CO.1 G-CO.6 G-CO.7 G-CO.12 G-GMD.4 G-MG.1 G-MG.3 RST.11-12.3			
11. Perform assembly procedures.	G-CO.1 G-CO.6 G-CO.7 G-CO.12 G-GMD.4 G-MG.1 G-MG.3 SL.11-12.4			
12. Describe why a project should	L.11-12.6			

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have a finish.	SL.11-12.4			
13. Determine actual cost of materials and labor for project.	N-Q.1 N-Q.2 N-Q.3			
14. Use hand and power tools in completing a project.				
15. Demonstrate an understanding of the skills and procedures necessary to build a project by selecting an appropriate project; devising elevation drawings, a bill of materials, and a plan of procedure for the project; and applying their plan to complete the project within the allotted time.	N-Q.1 N-Q.2 N-Q.3 G-CO.1 G-CO.6 G-CO.7 G-CO.12 G-GMD.4 G-MG.1 G-MG.3 L.11-12.6 RST.11-12.9 WHST.11-12.2			

**Codes for Common Core Mathematics are:**

- N = Number and Quantity
- A = Algebra
- F = Functions
- G = Geometry
- S = Statistics and Probability

**Codes for Common Core English Language Arts and Literacy are:**

- RL = Reading for Literature
- RI = Reading for Informational Text
- RST = Reading for Literacy in Science and Technical Subjects

- RH = Reading for Literacy in History/Social Studies
- W = Writing
- WHST = Writing for Literacy in History/Social Studies, Science, and Technical Subjects
- SL = Speaking and Listening
- L = Language