Appendix A: AFNR Career Content Cluster Standards-**Agricultural Mechanics**

	Performance Measurement Levels	Event Activity Addressing Measurement	Related Academic Standards
ABS.01.02. Performance Indicator: Apply principles of entrepreneurship in businesses.			Social Studies: 7d
	ABS.01.02.01.c. Demonstrate entrepreneurship, including idea generation, opportunity analysis and risk assessment.	Team activity	
ABS.03.02. Performance Indicator: Implement appropriate inventory management practices.			Language Arts: 8
	ABS.03.02.01.b. Use computer technology in inventory management and reporting, including spread- sheets, databases, word processing, networked systems and the Internet.	Team activity	
AS.07.01. Performance Indicator: Design animal housing, equipment and handling facilities for the major systems of animal production.			Science: C6 and F6
	AS.07.01.01.b. Critique designs for an animal facility and prescribe alternative layouts and adjustments for the safe and efficient use of the facility.	Structural system; team activity	
	AS.07.01.02.c. Select equipment and implement animal handling procedures and improvements to enhance production efficiency.	Structural system; environmental and natural resources system; machinery and equipment system; team activity	
AS.07.02. Performance Indicator: Comply with government regulations and safety standards for facilities used in animal production.			Science: F5
	AS.07.02.01.c. Design a facility that meets standards for the legal, safe, ethical and efficient production of animals.	Environmental and natural resources system; structural system; team activity	
ESS.01.01. Performance Indicator: Analyze and interpret samples.			Math: 1A, 1B, 4A and 5B Science: A2
	ESS.01.01.01.c. Analyze and interpret results of sample measurements.	All activities	
	ESS.01.01.02.c. Calibrate and use laboratory and field equipment and instruments according to standard operating procedures.	All activities	

ESS.03.02. Performance Indicator: Apply soil science principles to environmental service systems.			Science: B2 and D2 Social Studies: 3k
	ESS.03.02.03.b. Identify the physical qualities of the soil that determine its use for environmental service systems.	Environmental and natural resources system; structural system; machinery and equipment system; team activity	

ESS.03.03. Performance Indicator: Apply hydrology principles to environmental service systems.			Science: D2
	ESS.03.03.04.c. Test and document the quality of groundwater supplies.	Environmental and natural resources system	
	ESS.03.03.06.c. Install and maintain pumps and associated delivery systems.	Environmental and natural resources system	
ESS.04.02. Performance Indicator: Manage safe disposal of all categories of solid waste.			Science: F1, F4 and F5
	ESS.04.02.01.c. Analyze environmental hazards associated with the identification and acceptance of solid	Environmental and natural resources system	
ESS.04.05. Performance Indicator: Manage hazardous materials to assure a safe facility and to comply with applicable regulations.			Science: F4 and F5
	ESS.04.05.01.c. Describe the procedures for the treatment and disposal of hazardous materials and	Environmental and natural resources system	
ESS.06.01. Performance Indicator: Use technological and mathematical tools to map land, facilities and infrastructure.			Science: A3 Social Stud- ies: 3c and 3e
	ESS.06.01.01.c. Demonstrate surveying and carto- graphic skills to make site measurements and map facility accesses and infrastructure.	Environmental and natural resources system; machinery and equipment system; team activity	
ESS.06.02. Performance Indicator: Maintain tools, equipment and machinery in safe working order for tasks in environmental service systems.			N/A
	ESS.06.02.01.c. Demonstrate proper preventive maintenance techniques and set up a mock preventive maintenance	All activities	
FPP.02.01. Performance Indicator: Manage operational procedures and create equipment and facility maintenance plans.			Language Arts: 12
	FPP.02.01.03.c. Perform basic equipment and facility maintenance in a food products and processing operation.	All activities	

NRS.02.02. Performance Indicator: Demonstrate cartographic skills to aid in developing, implementing and evaluating natural resource management plans.			Math: 4B Science: A3 and F2 Social Studies: 3b and 3c
	NRS.02.02.01.c. Employ Global Positioning System and Geographic Information Systems technologies to inventory features in natural resource management.	Environmental and natural resources system; machinery and equipment system; team activity	
PS.02.03. Performance Indicator: Develop and implement a fertilization plan for specific plants or crops.			Math: 4B Science: A2

	PS.02.03.04.c. Use variable-rate technology to apply fertilizers to meet crop nutrient needs.	Environmental and natural resources system, machinery and equipment system, team activity	
PS.03.03. Performance Indicator: Develop and implement a plan for integrated pest management.			Science: C4 and C6 Language Arts: 7
	PS.03.03.04.c. Evaluate environmental and consumer concerns regarding pest management strategies.	Environmental and natural resources system, machinery and equipment system, team activity	
PS.03.04. Performance Indicator: Apply principles and practices of sustainable agriculture to plant production.			Science: F3, F4 and F6
	PS.03.04.01.c. Prepare and implement a plan for an agricultural enterprise that involves practices in support of	All activities	
PS.03.05. Performance Indicator: Harvest, handle and store crops.			Science: F5
	PS.03.05.01.a. Identify harvesting methods and harvesting equipment.	Machinery and equipment system	
PST.01.01. Performance Indicator: Select energy sources in power generation appropriate to the situation.			Science: B5, D1 and F3
	PST.01.01.01.c. Compare the efficiency of energy production from	All activities	
PST.01.02. Performance Indicator: Apply physical science laws and principles to identify, classify and use lubricants.			Science: B4
	PST.01.02.01.c. Select, use and dispose of lubricants.	Machinery and equipment system, environ- mental and natural resources system	

PST.01.03. Performance Indicator: Identify and use hand and power tools and equipment for service, construction and fabrication.			Science: E2
	PST.01.03.01.c. Assess the performance of employees in use of hand and power tools to safely and efficiently service, construct and fabricate quality products.	All activities	
PST.02.01. Performance Indicator: Perform service routines to maintain power units and equipment.			Science: E2
	PST.02.01.01.c. Test and service electrical systems.	Electrical system, energy system, machinery system, team activity	
	PST.02.01.02.c. Troubleshoot malfunctions and failures in equipment using computer and on-board diagnostics.	Machinery and equipment system, electrical system, energy system, team activity	
	PST.02.01.03.c. Maintain and calibrate metering, monitoring and sensing devices on equipment.	Machinery and equipment system, electrical system, energy system, team activity	

PST.02.02. Performance Indicator: Operate, service and diagnose the condition of power units and equipment.			Science: E2
	PST.02.02.01.c. Select power units and equipment for operational efficiencies.	Machinery and equipment system, electrical system, structural system, energy system, team activity	
	PST.02.02.02.c. Adjust equipment for safe and efficient operation.	All activities	
PST.03.01. Performance Indicator: Troubleshoot and repair internal combustion engines.			Science: A1 and A4 Language Arts: 3
	PST.03.01.01.c. Performance test internal combustion engines to determine service and repair needs.	Machinery and equipment system, energy system, team activity	
	PST.03.01.02.c. Overhaul spark-and-compression internal combustion engines.	Machinery and equipment system, energy system, team activity	
PST.03.02. Performance Indicator: Utilize manufacturers' guidelines to service and repair the power transmission systems of equipment.			Math: 1C and 6B Science: B4 and E1
	PST.03.02.02.b. Describe features, benefits and applications of mechanical transmission components, including belts, chains, gears, bearings, seals, universals	Machinery and equipment system, energy system, team activity	
	PST.03.02.03.a. Identify power transfer principles, including those using friction, gears and fluids.	Machinery and equipment system, energy system, team activity	

PST.03.03. Performance Indicator: Service and repair hydraulic and pneumatic systems.			Science: B4 and E1
	PST.03.03.02.c. Inspect, analyze and repair hydraulic and pneumatic system components, including flu- id and	Machinery and equipment system, energy system, team activity	
PST.03.04. Performance Indicator: Troubleshoot and service electrical systems.			Math: 6B Science: E1
	PST.03.04.01.c. Evaluate power unit and equipment electrical systems, including ignition, lighting, auxiliary and electronic braking.	Machinery and equipment system, energy system, electrical system, team activity	
	PST.03.04.02.c. Assess and repair malfunctioning electrical systems and components, such as battery, lighting, instrumentation and accessories.	Machinery and equipment system, energy system, electrical system, team activity	
PST.03.05. Performance Indicator: Service vehicle heating and air-conditioning systems.			Math: 4A and 6C

	PST.03.05.01.b. Describe physical principles of operation of vehicle heating and air-conditioning systems and interpret symbols and diagrams used with such systems.	Machinery and equipment system, energy system, team activity	
PST.03.06. Performance Indicator: Service and repair steering, suspension, traction and vehicle performance systems.			Math: 4A and 6C
	PST.03.06.01.c. Evaluate vehicle stability, power- hop, creep-crawl, wheel slip and tractive performance	Machinery and equipment system, team activity	
	PST.03.06.02.c. Evaluate vehicle suspension and steering systems and service as needed.	Machinery and equipment system, energy system, team activity	
PST.04.01. Performance Indicator: Create sketches and plans of agricultural structures.			Math: 4A Science: A3 and E1
	PST.04.01.01.c. Apply principles of design, fabrication and installation of	Structural system, team activity	
	PST.04.01.02.c. Design functional and efficient facilities for	All activities	
PST.04.02. Performance Indicator: Apply structural plans, specifications and building codes.			Language Arts: 12
	PST.04.02.02.c. Follow local construction and safety codes and specifications in agricultural construction.	Structural system, electrical system, energy system, team activity	
PST.04.03. Performance Indicator: Examine structural requirements for materials and procedures and estimate construction cost.			Math: 1C and 6B
	PST.04.03.01.c. Prepare a project cost estimate, including materials,	All activities	

PST.04.04. Performance Indicator: Follow architectural and mechanical plans to construct and/or repair equipment, buildings and facilities.			Math: 1C, 4A and 4B Science: E2
	PST.04.04.01.c. Evaluate work products or samples for quality and efficiency of workmanship following architectural and mechanical plans.	Structural system, environmental and natural resources system, electrical system, team activity	
	PST.04.04.02.c. Install and/or repair electrical wiring components and fixtures following appropriate codes and standards.	Structural system, electrical system, energy system, team activity	
	PST.04.04.04.c. Insulate a structure.	Structural system, energy system, team activity	
	PST.04.04.05.b. Construct and/or repair with concrete, brick, stone or masonry units.	Structural system, team activity	

	PST.04.04.07.c. Construct and/or repair metal structures and equipment using welding fabrication procedures, including those associated with SMAW, GMAW, GTAW, fuel-oxygen and plasma arc torch	Structural system, team activity	
PST.05.01. Performance Indicator: Use instruments and meters to test and monitor electrical and electronic processes.			Math: 4B Science: A3
	PST.05.01.01.c. Locate and use electrical codes and regulations.	Structural system, energy system, team activity	
PST.05.02. Performance Indicator: Prepare and/or use electrical drawings to design, install and troubleshoot control systems.			Science: E1
	PST.05.02.01.c. Identify and use electrical control system components, including transistors, relays, HVAC and logic controllers.	Electrical system, energy system, team activity	
	PST.05.02.02.c. Troubleshoot electrical control system performance problems.	Electrical system, energy system, team activity	
	PST.05.02.03.c. Plan and install electrical control circuits to assure proper operation.	Electrical system, energy system, team activity	
PST.05.03. Performance Indicator: Use geospatial technologies in agricultural applications.			Science: A3, E2 and F6 Social Studies: 3c
	PST.05.03.02.c. Output and apply maps using GIS/ GPS systems.	Environmental and natural resources system, machinery and equipment system, team activity	
	PST.05.03.03.c. Demonstrate geospatial applications, including calibration, volumetric controlling and electrical design.	Environmental and natural resources system, machinery and equipment system, team activity	

CS.01.01. Performance Indicator: Action: Exhibit the skills and competencies needed to achieve a desired result.			Social Studies: 4d and 4h
	CS.01.01.01.c. Work independently and in group settings to accomplish a task.	Team activity	
	CS.01.01.03.c. Implement an effective project plan.	Team activity	
	CS.01.01.06.c. Develop strengths and talents of team members so that all can achieve success.	Team activity	
CS.01.02. Performance Indicator: Relationships: Build a constituency through listening, coaching, understanding and appreciating others.			Language Arts: 12 Social Studies: 4h
	CS.01.02.02.b. Utilize communication skills to collaborate in a group setting.	Team activity	

CS.02.02. Performance Indicator: Social Growth: Interact with others in a manner that respect the difference of a diverse and changing society.			Language Arts: 12 Social Studies: 1e
	CS.02.02.03.b. Exhibit the behaviors needed for developing and maintaining a professional relationship.	Team activity	
CS.02.04. Performance Indicator: Mental Growth: Demonstrate the effective application of reasoning, thinking and coping skills.			Math: 6C Science: A4 Language Arts: 4 and 8
	CS.02.04.01.c. Demonstrate critical and creative thinking skills while completing a task.	Team activity	
CS.03.02. Performance Indicator: Decision Making –Analyze situations and execute an appropriate course of action.			Science: A1 and A5 Social Studies: 1c and 4h
	CS.03.02.01.c. Make decisions for a given situation by applying the decision- making process.	Team activity	
	CS.03.02.02.c. Use problem-solving skills.	Team activity	
CS.03.03.02.c. Performance Indicator: Flexibility: Adaptability: Describe traits that enable one to be capable and willing to accept change.			Science: A2, A6 and E2 Language Arts: 7 Social Studies: 8a
	CS.03.03.02.c. Evaluate strategies that can be used to manage change within the workplace.	Team activity	