Agricultural Mechanics

Academic Content Area: Environment and Ecology – Grade 10

Career Development Event Content
1. Machinery and Equipment Systems – application and equipment calibration, and nozzle selection, equipment testing and maintenance. 2. Industry and Marketing Systems – mixing, loading, and transport safety, economics, understanding and following label instructions, governmental regulations. 3. Energy Systems – power requirements, variable rate applications, and electronically controlled equipment, and valves, pumps, and pressure regulators. 4. Structural Systems – storage, mixing and loading requirements, fire safety, temperature control, ventilation, construction requirements. 5. Environmental and Natural Resource Systems – pesticide and pesticide container disposal, pesticide handling, drift control, impact on non-target plants animals, and insects.
Related Academic Standards/Anchors
Objectives 1-5: **4.1.10.B; 4.2.10.C; 4.3.10.A,B; 4.4.10.A,B,C,D; 4.5.10.A,B,C; 4.9.10.A**
Connecting Examples: CDE Objectives and Standards/Anchors
Ex. 1 Related to 4.9.10.A: Explain why environmental laws and regulations are developed and enacted. Sub-point, understand conflicting rights of property owners and environmental laws and regulations. **Students are required to know and understand common laws and regulations within the agriculture industry that will need to be considered during the execution of a content area activity.** Ex. 2 Related to 4.4.10.B: Assess the influence of agricultural science on farming practices. Sub-point, analyze and explain the various practices of nutrient management on the farm. **Students must be prepared to answer and develop required plans for an activity regarding farming practices through analyzing and explaining nutrient management on the farm.** Ex. 3 Related to 4.3.10.A: Describe environmental health issues. Sub-point, identify the effects on human health of air, water and soil pollution and the possible economic costs to society. **A system component may ask students to compare the system or product they have engineered to those that currently exist. Through this the student must be able to identify the multiple effects and economics that are associated.**

Agricultural Mechanics

Academic Content Area: Mathematics – Grade 11

Career Development Event Content
1. Machinery and Equipment Systems – application and equipment calibration, and nozzle selection, equipment testing and maintenance. 2. Industry and Marketing Systems – mixing, loading, and transport safety, economics, understanding and following label instructions, governmental regulations. 3. Energy Systems – power requirements, variable rate applications, and electronically controlled equipment, and valves, pumps, and pressure regulators. 4. Structural Systems – storage, mixing and loading requirements, fire safety, temperature control, ventilation, construction requirements. 5. Environmental and Natural Resource Systems – pesticide and pesticide container disposal, pesticide handling, drift control, impact on non-target plants animals, and insects.
Related Academic Standards/Anchors
Objectives 1-5: **2.1.11.A; 2.2.11.A,C; 2.3.11.A,B,C; 2.5.11.A,B,C; 2.8.11.A,D; 2.9.11.F,G**
Connecting Examples: CDE Objectives and Standards/Anchors
Ex. 1 – Related to 2.3.11.A: Select and use appropriate units and tools to measure to the degree of accuracy required in particular measurement situations. **Using the measuring device provided and the calibration tools found at the workstation, determine and record the truck manifest and the producer farm weight record for pound of milk indicated by measuring device and thermometer temperature of milk.** Ex. 2 – Related to 2.5.11.A: Select and use appropriate mathematical concepts and techniques from different areas of mathematics and apply them to solving non-routine and multi-step problems. **You have been assigned to extend a water line for an automatic dairy waterer, and continue on for 14 inches before tuning 90 degrees to go through the hole. The dimensional specifications given on the plans are very critical to accomplish this task. Use schedule 40 PVC pipe and fittings. What is the nominal size of the pipe used? What is the Socket Depth of the elbows? What would be the pressure loss in pounds per square inch of this system over 100 feet if set to handle 10 gallons per minute (gpm)?**

Agricultural Mechanics

Academic Content Area: Reading, Writing, Speaking and Listening – Grade 11

Career Development Event Content
1. Machinery and Equipment Systems – application and equipment calibration, and nozzle selection, equipment testing and maintenance. 2. Industry and Marketing Systems – mixing, loading, and transport safety, economics, understanding and following label instructions, governmental regulations. 3. Energy Systems – power requirements, variable rate applications, and electronically controlled equipment, and valves, pumps, and pressure regulators. 4. Structural Systems – storage, mixing and loading requirements, fire safety, temperature control, ventilation, construction requirements. 5. Environmental and Natural Resource Systems – pesticide and pesticide container disposal, pesticide handling, drift control, impact on non-target plants animals, and insects.
Related Academic Standards/Anchors
Objectives 1-5: **1.1.11.E,F,H; 1.2.11.A; 1.4.11.B,C; 1.5.11.A,B,F,G; 1.6.10.A,C,D,E; 1.8.11.C**
Connecting Examples: CDE Objectives and Standards/Anchors
Ex. 1 – Related to 1.4.11.B: Write complex informational pieces (e.g., research papers, analyses, evaluations, essays). Sub-point, include a variety of methods to develop the main idea. **Students are required to participate in team and individual problem-solving activities that enable them to document their work through analyses and evaluation of situational items.** Ex. 2 – Related to 1.5.11.G: Present and/or defend written work for publication when appropriate. **Students are required to present/defend the work they engaged in during the individual and team activities.** Ex. 3 – Related to 1.6.11.D: Contribute to discussion. **Through the team activity student are evaluated on their ability to respond to relevant information or opinions to questions asked, listen to and acknowledge the contributions of others, facilitate total group participation, introduce relevant, facilitating information, ideas and opinions to enrich the discussion and paraphrase and summarize information as needed.**

Agricultural Mechanics

Academic Content Area: Science and Technology – Grade 10

Career Development Event Content
1. Machinery and Equipment Systems – application and equipment calibration, and nozzle selection, equipment testing and maintenance. 2. Industry and Marketing Systems – mixing, loading, and transport safety, economics, understanding and following label instructions, governmental regulations. 3. Energy Systems – power requirements, variable rate applications, and electronically controlled equipment, and valves, pumps, and pressure regulators. 4. Structural Systems – storage, mixing and loading requirements, fire safety, temperature control, ventilation, construction requirements. 5. Environmental and Natural Resource Systems – pesticide and pesticide container disposal, pesticide handling, drift control, impact on non-target plants animals, and insects.
Related Academic Standards/Anchors
Objectives 1-5: **3.1.10.A,B,D,E; 3.2.10.A,B,C,D; 3.4.10.A,B,C; 3.5.10.D; 3.6.10.A,B,C; 3.7.10.A,B,C,D,E; 3.8.10.A,B,C**
Connecting Examples: CDE Objectives and Standards/Anchors
Ex. 1 Related to 3.1.10.A: Discriminate among the concepts of systems, subsystems, feedback and control in solving technological problems. Sub-point, describe the interrelationships among inputs, processes, outputs, feedback and control in specific systems. Students are required to demonstrate a knowledge, understanding and ability to solve complex, multi-system agricultural problems. Students must consider numerous variables and make a variety of decisions. Ex. 2 Related to 3.5.10.D: Assess the value of water as a resource. Sub-point, identify the components of a municipal/agricultural water supply system and a wastewater treatment system. **Student must understand the components of agricultural water supply systems and treatment systems and may be asked to develop a specialized system to meet specific needs set by contest committee.** Ex. 3 Related to 3.7.10.C: Apply basic computer operations and concepts. Sub-point, Describe the process for basic software installation and demonstrate it. **Students were asked to install the Grainger^{R} CD-ROM Catalog No.394 onto their personal computer in order to complete the team activity using the computer software.**