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| **Framework Title:** Power, Structural and Technical Systems (PST) | | | | | |
| **CIP Code: 010201, 010204, 010205** | | | **Total Framework Hours up to:** | | |
| **Course: PST Level 1,2, and 3** | | | **Exploratory Preparatory** | | |
| **Career Cluster: AFNR Cluster Pathway: PST Date Last Modified:** | | | | | |
| **Pathway Content Standard: The Student will demonstrate competence in the application of principles and techniques for the development and management of power, structural and technical systems.** | | | | | |
| **Performance Assessments** | | | | | |
| *SAE.01. This course will include instruction in and Student involvement in Supervised Agriculture Experience Projects (SAE).* | | | | | |
| ***STANDARDS AND PERFORMANCE INDICATORS*** | | | | | |
| **Performance Indicator: SAE.01.01. The Students will establish and conduct Supervised Agriculture Experience Projects (SAE) as an integral part of an Agriculture Education program. This information is taught at the beginning of the course. Total Learning Hours: 5 to 10 hours** | | | | | |
| **Level I=Basic Level II=Core Level III=Advanced** | | | | Standards | |
| **Level I, II, III** | **Performance Indicators** | | | |  |
| **SAE.01.01.a.** | | Explain the history of SAE. | | |  |
| **SAE.01.01.b.** | | Explain the benefits of SAE projects to skill development, leadership and career success. | | |  |
| **SAE.01.01.c.** | | Explain the connection between SAE and FFA. | | |  |
| **SAE.01.01.d.** | | Explain the five types of SAE. (Entrepreneurship, Placement, Research, Exploratory, Improvement) | | |  |
| **SAE.01.01.e.** | | Explore ideas for SAE projects. | | |  |
| **SAE.01.01.f.** | | Explain how SAE projects support academic achievement. | | |  |
| **SAE.01.01.g.** | | Select and establish an SAE project. | | |  |
| **SAE.01.01.h.** | | Explain and keep records on established SAE projects. | | | |
| **SAE.01.01.i.** | | Explain SAE project Supervision, visitation and assessment. | | | |
| **SAE.01.01.j.** | | Explain how SAE projects benefit the community. | | | |
| **SAE.01.01.k.** | | Seek recognition for SAE project accomplishments. | | | |
| **SAE.01.01.l.** | | Explain the three circle concept for SAE, FFA Leadership, and Classroom/Laboratory in an Agriculture Education program. | | | |

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| **Performance Element Assessed:** | | | | | | | |
| **PST.01. Performance Element: Use physical science principles and engineering applications with power, structural and technical systems to solve problems and improve performance.** | | | | | | | |
| ***PERFORMANCE INDICATOR(S)*** | | | | | | | |
| **PST.01.01. Performance Indicator:** Select energy sources in power generation appropriate to the situation. **Sc B5, D1, and F3**  **PST.01.02. Performance Indicator:** Apply physical science laws and principles to identify, classify and use lubricants. **Sc B4**  **PST.01.03. Performance Indicator:** Identify and use hand and power tools and equipment for service, construction and fabrication. **Sc E2** | | | | | | | |
| **Number Performance: Level I=Basic Level II=Core Level III=Advanced** | | | | | | | Standard # |
| **PST.01.01.01.a.** | | Identify renewable and nonrenewable energy sources and pathways of delivery. Level I | | | | |  |
| **PST.01.01.01.b.** | | Examine environmental impacts and efficiencies of energy sources. Level II | | | | |  |
| **PST.01.01.01.c.** | | Compare the efficiency of energy production from various sources. Level III | | | | |  |
| **PST.01.02.01.a.** | | Classify lubricants by source, sustainability and equipment compatibility. Level I | | | | |  |
| **PST.01.02.01.b.** | | Classify lubricants by SAE viscosity and API service classifications. Level II | | | | |  |
| **PST.01.02.01.c.** | | Select, use and dispose of lubricants. Level III | | | | |  |
| **PST.01.03.01.a.** | | Identify and demonstrate safe use and maintenance of measurement and layout tools. Level I | | | | |  |
| **PST.01.03.01.b.** | | Select, maintain and use hand and power tools in service, construction and fabrication. Level II | | | | |  |
| **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. Level III | | | | |  |
| **Social Studies - Civics** | | | | | | | |
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| **Writing** | | | | | | | |
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| **Art** | | | | | | | |
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| **Science Standards** | | | | | | | |
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| **Mathematics Standards** | | | | | | | |
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| ***SKILLS*** | | | | | | | |
| **Leadership:** | | | | | | | |
| **Employability:** | | | | | | | |
| **Analytical, Logical & Creative Thinking (check those that students will demonstrate in this lesson):** | | | | | | | |
| Observe  Patterns  Sequence  Classify  Compare/Contrast  Predict | | | Cause/Effect  Fact/Opinion  Main Idea  Summary  Point of View  Analysis | Finding Evidence  Evaluation  Detect Bias  Inference  Conclusion  Metacognition | Reasoning  Problem Solving  Goal Setting  Fluency  Elaboration  Flexibility | Originality  Risking  Inquisitiveness  Attending  Persistence  Precision | |
| **Relevance to Work:** Understanding that a strong work ethic will contribute to higher productivity in organizations. | | | | | | | |

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| **Performance Element Assessed:** | | | | | | | |
| **PST.02. Performance Element: Design, operate and maintain mechanical equipment, structures, biological systems, land treatment, power and technology.** | | | | | | | |
| ***PERFORMANCE INDICATOR(S)*** | | | | | | | |
| **PST.02.01. Performance Indicator:** Perform service routines to maintain power units and equipment. **Sc E2**  **PST.02.02. Performance Indicator:** Operate service and diagnose the condition of power units and equipment. **Sc E2** | | | | | | | |
| **Number Performance: Level I=Basic Level II=Core Level III=Advanced** | | | | | | | Standard # |
| **PST.02.01.01.a.** | | Identify and schedule power unit and equipment lubrication. Level I | | | | |  |
| **PST.02.01.01.b.** | | Ensure the presence and function of safety systems and hardware on tools and equipment. Level II | | | | |  |
| **PST.02.01.01.c.** | | Test and service electrical systems. Level III | | | | |  |
| **PST.02.01.02.a.** | | Service filtration systems and maintain fluid levels on power units and equipment. Level I | | | | |  |
| **PST.02.01.02.b.** | | Adjust equipment, including belts and drives, chains and sprockets, and maintain fluid conveyance components, such as hoses, lines and nozzles. Level II | | | | |  |
| **PST.02.01.02.c.** | | Troubleshoot malfunctions and failures in equipment using computer and on-board diagnostics. Level III | | | | |  |
| **PST.02.01.03.a.** | | Maintain the cleanliness and appearance of power units and equipment to assure functionality. Level I | | | | |  |
| **PST.02.01.03.b.** | | Develop a preventive maintenance schedule for power units and equipment. Level II | | | | |  |
| **PST.02.01.03.c.** | | Maintain and calibrate metering, monitoring and sensing devices on equipment. Level III | | | | |  |
| **PST.02.02.01.a.** | | Identify power unit and equipment controls and instruments, along with their functions. Level I | | | | |  |
| **PST.02.02.01.b.** | | Perform start-up and shut-down procedures on power units and equipment as specified in technical manuals. Level II | | | | |  |
| **PST.02.02.01.c.** | | Select power units and equipment for operational efficiencies. Level III | | | | |  |
| **PST.02.02.02.a.** | | Perform pre-operation inspection according to manufacturers’ specifications and/or prevailing industry standards. Level I | | | | |  |
| **PST.02.02.02.b.** | | Demonstrate safe practices and regulations in the operation of power units and equipment. Level II | | | | |  |
| **PST.02.02.02.c.** | | Adjust equipment for safe and efficient operation. Level III | | | | |  |
| **Social Studies - Civics** | | | | | | | |
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| **Writing** | | | | | | | |
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| **Art** | | | | | | | |
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| **Science Standards** | | | | | | | |
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| **Mathematics Standards** | | | | | | | |
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| ***SKILLS*** | | | | | | | |
| **Leadership:** | | | | | | | |
| **Employability:** | | | | | | | |
| **Analytical, Logical & Creative Thinking (check those that students will demonstrate in this lesson):** | | | | | | | |
| Observe  Patterns  Sequence  Classify  Compare/Contrast  Predict | | | Cause/Effect  Fact/Opinion  Main Idea  Summary  Point of View  Analysis | Finding Evidence  Evaluation  Detect Bias  Inference  Conclusion  Metacognition | Reasoning  Problem Solving  Goal Setting  Fluency  Elaboration  Flexibility | Originality  Risking  Inquisitiveness  Attending  Persistence  Precision | |
| **Relevance to Work:** Understanding that a strong work ethic will contribute to higher productivity in organizations. | | | | | | | |

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| **Performance Element Assessed:** | | | | | | | |
| **PST.03. Performance Element: Service and repair mechanical equipment and power systems.** | | | | | | | |
| ***PERFORMANCE INDICATOR(S)*** | | | | | | | |
| **PST.03.01. Performance Indicator:** Troubleshoot and repair internal combustion engines. **Sc A1 A4, LA 3**  **PST.03.02. Performance Indicator:** Utilize manufacturers’ guidelines to service and repair the power transmission systems of equipment. **M 1C, 6B Sc B4, E1**  **PST.03.03. Performance Indicator:** Service and repair hydraulic and pneumatic systems. **Sc B4, E1**  **PST.03.04. Performance Indicator:** Troubleshoot and service electrical systems. **M 6B Sc E1**  **PST.03.05. Performance Indicator:** Service vehicle heating and air-conditioning systems. **M 4A and 6C**  **PST.03.06. Performance Indicator:** Service and repair steering, suspension, traction and vehicle performance systems. **M 4A and 6C** | | | | | | | |
| **Number Performance: Level I=Basic Level II=Core Level III=Advanced** | | | | | | | Standard # |
| **PST.03.01.01.a.** | | Identify components and systems of internal combustion engines. Level I | | | | |  |
| **PST.03.01.01.b.** | | Utilize technical manuals and computer-based diagnostics in engine analysis and repair. Level II | | | | |  |
| **PST.03.01.01.c.** | | Performance test internal combustion engines to determine service and repair needs. Level III | | | | |  |
| **PST.03.01.02.a.** | | Describe the operation of internal combustion engines by types of fuel used. Level I | | | | |  |
| **PST.03.01.02.b.** | | Analyze and troubleshoot internal combustion engines. Level II | | | | |  |
| **PST.03.01.02.c.** | | Overhaul spark-and-compression internal combustion engines. Level III | | | | |  |
| **PST.03.02.01.a.** | | Identify and describe applications of simple machines in power systems. Level I | | | | |  |
| **PST.03.02.01.b.** | | Identify and compare operation principles and features, benefits and applications of various power transmission systems. Level II | | | | |  |
| **PST.03.02.01.c.** | | Use speed, torque and power measurements to improve efficiency in power transmission systems. Level III | | | | |  |
| **PST.03.02.02.a.** | | Calculate mechanical advantage in mechanical systems. Level I | | | | |  |
| **PST.03.02.02.b.** | | Describe features, benefits and applications of mechanical transmission components, including belts, chains, gears, bearings, seals, universals and drive shafts. Level II | | | | |  |
| **PST.03.02.02.c.** | | Inspect, analyze and repair hydrostatic transmissions. Level III | | | | |  |
| **PST.03.02.03.a.** | | Identify power transfer principles, including those using friction, gears and fluids. Level I | | | | |  |
| **PST.03.02.03.b.** | | Inspect, analyze and repair clutches and brakes. Level II | | | | |  |
| **PST.03.02.03.c.** | | Inspect, analyze and repair differentials, final drives, transmissions (including gear-type and power-shift transmissions) and auxiliary drives. Level III | | | | |  |
| **PST.03.03.01.a.** | | Describe features, benefits and applications of common types of hydraulic and pneumatic systems. Level I | | | | |  |
| **PST.03.03.01.b.** | | Describe principles of hydraulic and pneumatic system operation. Level II | | | | |  |
| **PST.03.03.01.c.** | | Utilize symbols and schematic drawings in the maintenance of hydraulic and pneumatic systems. Level III | | | | |  |
| **PST.03.03.02.a.** | | Apply hydrostatic and hydrodynamic principles in hydraulics and pneumatics, including Archimedes’ principle and Pascal’s law. Level I | | | | |  |
| **PST.03.03.02.b.** | | Identify major components of hydraulic and pneumatic systems and describe their use. Level II | | | | |  |
| **PST.03.03.02.c.** | | Inspect, analyze and repair hydraulic and pneumatic system components, including fluid and compressed-air conveyance components. Level III | | | | |  |
| **PST.03.03.03.a.** | | Evaluate hydraulic and pneumatic system functionality. Level I | | | | |  |
| **PST.03.03.03.b.** | | Identify hydraulic and pneumatic system fittings and ports. Level II | | | | |  |
| **PST.03.03.03.c.** | | Use a pressure-and-flow tester in diagnosing malfunctions and repairing hydraulic and pneumatic systems. Level III | | | | |  |
| **PST.03.04.01.a.** | | Apply the meaning and measurement of electricity, including amperage, voltage and wattage. Level I | | | | |  |
| **PST.03.04.01.b.** | | Assess and install electrical circuits, including conductors, insulators and controls. Level II | | | | |  |
| **PST.03.04.01.c.** | | Evaluate power unit and equipment electrical systems, including ignition, lighting, auxiliary and electronic braking. Level III | | | | |  |
| **PST.03.04.02.a**. | | Identify the kinds and applications of electricity, including direct and alternating current. Level I | | | | |  |
| **PST.03.04.02.b.** | | Interpret electrical system symbols and diagrams. Level II | | | | |  |
| **PST.03.04.02.c.** | | Assess and repair malfunctioning electrical systems and components, such as battery, lighting, instrumentation and accessories. Level III | | | | |  |
| **PST.03.05.01.a.** | | Identify principles of heat and temperature measurement. Level I | | | | |  |
| **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. Level II | | | | |  |
| **PST.03.05.01.c.** | | Troubleshoot, repair and evacuate and charge heating and air-conditioning components, including compressors, expansion valves, receiver dryers, pumps, hoses and recovery tools and systems. Level III | | | | |  |
| **PST.03.06.01.a.** | | Identify and explain principles of motion, including speed, velocity and acceleration. Level I | | | | |  |
| **PST.03.06.01.b.** | | Evaluate vehicle traction, ballasting and weight transfer and service as needed. Level II | | | | |  |
| **PST.03.06.01.c.** | | Evaluate vehicle stability, power-hop, creep-crawl, wheel slip and tractive performance and service as needed. Level III | | | | |  |
| **PST.03.06.02.a.** | | Identify principles of force on acceleration, including friction and gravity. Level I | | | | |  |
| **PST.03.06.02.b.** | | Evaluate vehicle performance and then service as needed, including horsepower management, ballasting, soil compaction and fuel efficiency. Level II | | | | |  |
| **PST.03.06.02.c.** | | Evaluate vehicle suspension and steering systems and service as needed. Level III | | | | |  |
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| **Writing** | | | | | | | |
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| **Art** | | | | | | | |
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| **Science Standards** | | | | | | | |
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| **Mathematics Standards** | | | | | | | |
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| ***SKILLS*** | | | | | | | |
| **Leadership:** | | | | | | | |
| **Employability:** | | | | | | | |
| **Analytical, Logical & Creative Thinking (check those that students will demonstrate in this lesson):** | | | | | | | |
| Observe  Patterns  Sequence  Classify  Compare/Contrast  Predict | | | Cause/Effect  Fact/Opinion  Main Idea  Summary  Point of View  Analysis | Finding Evidence  Evaluation  Detect Bias  Inference  Conclusion  Metacognition | Reasoning  Problem Solving  Goal Setting  Fluency  Elaboration  Flexibility | Originality  Risking  Inquisitiveness  Attending  Persistence  Precision | |
| **Relevance to Work:** Understanding that a strong work ethic will contribute to higher productivity in organizations. | | | | | | | |

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| **Performance Element Assessed:** | | | | | | | |
| **PST.04. Performance Element: Plan, build and maintain agricultural structures.** | | | | | | | |
| ***PERFORMANCE INDICATOR(S)*** | | | | | | | |
| **PST.04.01. Performance Indicator:** Create sketches and plans of agricultural structures. **M 4A, Sc A3 and E1**  **PST.04.02. Performance Indicator:** Apply structural plans, specifications and building codes. **LA 12**  **PST.04.03. Performance Indicator:** Examine structural requirements for materials and procedures and estimate construction cost. **M 1C and 6B**  **PST.04.04. Performance Indicator:** Follow architectural and mechanical plans to construct and/or repair equipment, buildings and facilities. **M 1C, 4A and 4B Sc E2** | | | | | | | |
| **Number Performance: Level I=Basic Level II=Core Level III=Advanced** | | | | | | | Standard # |
| **PST.04.01.01.a.** | | Identify symbols and drawing techniques used to develop plans and sketches. Level I | | | | |  |
| **PST.04.01.01.b.** | | Develop plans and sketches using drafting equipment and computer programs. Level II | | | | |  |
| **PST.04.01.01.c.** | | Apply principles of design, fabrication and installation of agricultural structures. Level III | | | | |  |
| **PST.04.01.02.a.** | | Prepare bills of materials to accompany plans and sketches. Level I | | | | |  |
| **PST.04.01.02.b.** | | Use scale measurement and dimension to develop plans and sketches. Level II | | | | |  |
| **PST.04.01.02.c.** | | Design functional and efficient facilities for agricultural use. Level III | | | | |  |
| **PST.04.02.01.a.** | | Identify major parts of a construction drawing. Level I | | | | |  |
| **PST.04.02.01.b.** | | Identify and interpret different views of a construction drawing. Level II | | | | |  |
| **PST.04.02.01.c.** | | Locate, explain and apply elements of a construction drawing. Level III | | | | |  |
| **PST.04.02.02.a.** | | Identify the sources and importance of industry construction and materials standards, including those of the  American National Standards Institute (ANSI) and Underwriters’ Laboratories (UL). Level I | | | | |  |
| **PST.04.02.02.b.** | | Identify local code enforcement agencies and procedures. Level II | | | | |  |
| **PST.04.02.02.c.** | | Follow local construction and safety codes and specifications in agricultural construction. Level III | | | | |  |
| **PST.04.02.03.a.** | | Identify design and construction recommendations and practices in agricultural structures. Level I | | | | |  |
| **PST.04.02.03.b.** | | Read and interpret local structural code information. Level II | | | | |  |
| **PST.04.02.03.c.** | | Complete appropriate local permit applications for a construction project. Level III | | | | |  |
| **PST.04.03.01.a.** | | Identify criteria in selecting materials in agricultural construction/fabrication. Level I | | | | |  |
| **PST.04.03.01.b.** | | Select types of materials, determine quantities and estimate their costs and other costs associated with a specified project plan. Level II | | | | |  |
| **PST.04.03.01.c.** | | Prepare a project cost estimate, including materials, labor and management. Level III | | | | |  |
| **PST.04.03.02.a.** | | Explain the importance and use of requests for construction bids. Level I | | | | |  |
| **PST.04.03.02.b.** | | Establish business relationships with vendors of materials and services used in agricultural construction. Level II | | | | |  |
| **PST.04.03.02.c.** | | Prepare a bid package for a planned construction project, including construction timelines, site evaluation, construction plans and related management factors. Level III | | | | |  |
| **PST.04.04.01.a.** | | Construct and/or repair with wood and metal. Level I | | | | |  |
| **PST.04.04.01.b.** | | Install and/or repair pipes and plumbing equipment and fixtures. Level II | | | | |  |
| **PST.04.04.01.c.** | | Evaluate work products or samples for quality and efficiency of workmanship following architectural and mechanical plans. Level III | | | | |  |
| **PST.04.04.02.a.** | | Identify electricity measurements and make measurement calculations. Level I | | | | |  |
| **PST.04.04.02.b.** | | Distinguish electrical circuits and components of each. Level II | | | | |  |
| **PST.04.04.02.c.** | | Install and/or repair electrical wiring components and fixtures following appropriate codes and standards. Level III | | | | |  |
| **PST.04.04.03.a.** | | Calculate areas and volumes for coatings. Level I | | | | |  |
| **PST.04.04.03.b.** | | Paint or protect with coatings. Level II | | | | |  |
| **PST.04.04.03.c.** | | Electroplate or otherwise coat materials. Level III | | | | |  |
| **PST.04.04.04.a.** | | Calculate efficiencies gained through insulation. Level I | | | | |  |
| **PST.04.04.04.b.** | | Identify insulation materials and methods to achieve desired R-value. Level II | | | | |  |
| **PST.04.04.04.c.** | | Insulate a structure. Level III | | | | |  |
| **PST.04.04.05.a.** | | Measure and calculate materials for concrete, brick, stone or masonry units in agricultural construction. Level I | | | | |  |
| **PST.04.04.05.b.** | | Construct and/or repair with concrete, brick, stone or masonry units. Level II | | | | |  |
| **PST.04.04.05.c.** | | Seal, pigment and otherwise prepare concrete, brick, stone or masonry unit surfaces. Level III | | | | |  |
| **PST.04.04.06.a.** | | Measure and calculate fencing materials. Level I | | | | |  |
| **PST.04.04.06.b.** | | Construct and/or repair fencing, including wood, static wire, electrical wire and other fencing materials. Level II | | | | |  |
| **PST.04.04.06.c.** | | Comply with government regulations and applicable fencing and installation codes. Level III | | | | |  |
| **PST.04.04.07.a.** | | Identify kinds and characteristics of metal materials. Level I | | | | |  |
| **PST.04.04.07.b.** | | Distinguish welding processes, positions, and materials preparation. Level II | | | | |  |
| **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 methods. Level III | | | | |  |
| **PST.04.04.08.a.** | | Measure and calculate glass, rigid plastic panels and film plastics for job requirements. Level I | | | | |  |
| **PST.04.04.08.b.** | | Install glass, ridged plastic panels and/or film plastics. Level II | | | | |  |
| **PST.04.04.08.c.** | | Develop maintenance and service plans for glass, ridged plastic panel, and film plastics installations. Level III | | | | |  |
| **Social Studies - Civics** | | | | | | | |
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| **Writing** | | | | | | | |
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| **Art** | | | | | | | |
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| **Science Standards** | | | | | | | |
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| **Mathematics Standards** | | | | | | | |
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| ***SKILLS*** | | | | | | | |
| **Leadership:** | | | | | | | |
| **Employability:** | | | | | | | |
| **Analytical, Logical & Creative Thinking (check those that students will demonstrate in this lesson):** | | | | | | | |
| Observe  Patterns  Sequence  Classify  Compare/Contrast  Predict | | | Cause/Effect  Fact/Opinion  Main Idea  Summary  Point of View  Analysis | Finding Evidence  Evaluation  Detect Bias  Inference  Conclusion  Metacognition | Reasoning  Problem Solving  Goal Setting  Fluency  Elaboration  Flexibility | Originality  Risking  Inquisitiveness  Attending  Persistence  Precision | |
| **Relevance to Work:** Understanding that a strong work ethic will contribute to higher productivity in organizations. | | | | | | | |

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| **Performance Element Assessed:** | | | | | | | |
| **PST.05. Performance Element: Apply technology principles in the use of agricultural technical systems.** | | | | | | | |
| ***PERFORMANCE INDICATOR(S)*** | | | | | | | |
| **PST.05.01. Performance Indicator:** Use instruments and meters to test and monitor electrical and electronic processes. **M 4B, Sc A3**  **PST.05.02. Performance Indicator:** Prepare and/or use electrical drawings to design, install and troubleshoot control systems. **Sc E1**  **PST.05.03. Performance Indicator:** Use geospatial technologies in agricultural applications. **Sc A3, E2, and F6 SS 3C** | | | | | | | |
| **Number Performance: Level I=Basic Level II=Core Level III=Advanced** | | | | | | | Standard # |
| **PST.05.01.01.a.** | | Discuss various types and sources of electricity. Level I | | | | |  |
| **PST.05.01.01.b.** | | Use volt and amp meters and continuity testers to demonstrate electricity principles. Level II | | | | |  |
| **PST.05.01.01.c.** | | Locate and use electrical codes and regulations. Level III | | | | |  |
| **PST.05.02.01.a.** | | Recognize common electrical symbols. Level I | | | | |  |
| **PST.05.02.01.b.** | | Read and design schematic drawings for an electrical control system. Level II | | | | |  |
| **PST.05.02.01.c.** | | Identify and use electrical control system components, including transistors, relays, and HVAC and logic controllers. Level III | | | | |  |
| **PST.05.02.02.a.** | | Identify uses of electrical sensors and controls. Level I | | | | |  |
| **PST.05.02.02.b.** | | Interpret maintenance schedules for electrical control systems. Level II | | | | |  |
| **PST.05.02.02.c.** | | Troubleshoot electrical control system performance problems. Level III | | | | |  |
| **PST.05.02.03.a.** | | Identify hazards and safety practices in planning, installing and using electricity. Level I | | | | |  |
| **PST.05.02.03.b.** | | Distinguish and select materials and tools used in electrical control circuit installation. Level II | | | | |  |
| **PST.05.02.03.c.** | | Plan and install electrical control circuits to assure proper operation. Level III | | | | |  |
| **PST.05.02.04.a.** | | Identify the importance and uses of computer-based systems in agriculture, food and natural resources. Level I | | | | |  |
| **PST.05.02.04.b.** | | Delineate the functions of programmable logic controllers (PLC) in agricultural production and manufacturing. Level II | | | | |  |
| **PST.05.02.04.c.** | | Develop and implement control systems using programmable logic controllers (PLC) and/or other computer-based systems that operate as specified. Level III | | | | |  |
| **PST.05.02.05.a.** | | Use common computer-based programs to analyze agricultural data. Level I | | | | |  |
| **PST.05.02.05.b.** | | Assess database summaries to draw conclusions and propose plans of action. Level II | | | | |  |
| **PST.05.02.05.c.** | | Use computer-based data acquisition devices and sensors to statistically analyze and interpret data. Level III | | | | |  |
| **PST.05.03.01.a.** | | Identify geospatial technologies, including global positioning, geographical information and remote sensing. Level I | | | | |  |
| **PST.05.03.01.b.** | | Explain and evaluate concepts and principles of geospatial technologies. Level II | | | | |  |
| **PST.05.03.01.c.** | | Assess and install instrumentation and data acquisition systems, including Global Positioning System (GPS) receivers. Level III | | | | |  |
| **PST.05.03.02.a.** | | Explain site-specific agriculture as related to geospatial technologies. Level I | | | | |  |
| **PST.05.03.02.b.** | | Describe equipment and processes used in geospatial technologies. Level II | | | | |  |
| **PST.05.03.02.c.** | | Output and apply maps using GIS/GPS systems. Level III | | | | |  |
| **PST.05.03.03.a.** | | Identify uses, components and setup of precision technology in agriculture, food and natural resources. Level I | | | | |  |
| **PST.05.03.03.b.** | | Describe principles of precision agriculture for map- and sensor-based systems. Level II | | | | |  |
| **PST.05.03.03.c.** | | Demonstrate geospatial applications, including calibration, volumetric controlling and electrical design. Level III | | | | |  |
| **PST.05.03.04.a.** | | Describe the meaning and use of sensors, controllers and actuators. Level I | | | | |  |
| **PST.05.03.04.b.** | | Identify sensor, control, and actuator system components on power units and equipment. Level II | | | | |  |
| **PST.05.03.04.c.** | | Diagnose malfunctions and repair control systems and sensors, including those of engines, transmissions and implements. Level III | | | | |  |
| **Social Studies - Civics** | | | | | | | |
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| **Writing** | | | | | | | |
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| **Art** | | | | | | | |
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| **Science Standards** | | | | | | | |
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| **Mathematics Standards** | | | | | | | |
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| ***SKILLS*** | | | | | | | |
| **Leadership:** | | | | | | | |
| **Employability:** | | | | | | | |
| **Analytical, Logical & Creative Thinking (check those that students will demonstrate in this lesson):** | | | | | | | |
| Observe  Patterns  Sequence  Classify  Compare/Contrast  Predict | | | Cause/Effect  Fact/Opinion  Main Idea  Summary  Point of View  Analysis | Finding Evidence  Evaluation  Detect Bias  Inference  Conclusion  Metacognition | Reasoning  Problem Solving  Goal Setting  Fluency  Elaboration  Flexibility | Originality  Risking  Inquisitiveness  Attending  Persistence  Precision | |
| **Relevance to Work:** Understanding that a strong work ethic will contribute to higher productivity in organizations. | | | | | | | |

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| **Performance Assessments** | | | | | | |
| *To be completed by district* | | | | | | |
| ***STANDARDS AND PERFORMANCE INDICATORS*** | | | | | | |
| **Performance Indicator: Total Learning Hours for Standard:** | | | | | | |
| **Level II=Core Level III=Advanced** | | | | | | |
| **Level II** | | **Performance Indicator Description** | | | | |
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| **Level III** | |  | | | | |
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| ***EALRs, GLEs, Math and Science Standards (Taught & Assessed in Standards)***  ***(Samples included below of GLEs, EALRS, Math and Science Standards must be modified for district frameworks)*** | | | | | | |
| **Reading** | | | | | | |
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| **Communications** | | | | | | |
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| **Social Studies - Civics** | | | | | | |
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| **Writing** | | | | | | |
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| **Art** | | | | | | |
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| **Science Standards** | | | | | | |
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| **Mathematics Standards** | | | | | | |
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| ***SKILLS*** | | | | | | |
| **Leadership:** | | | | | | |
| **Employability:** | | | | | | |
| **Analytical, Logical & Creative Thinking (check those that students will demonstrate in this lesson):** | | | | | | |
| Observe  Patterns  Sequence  Classify  Compare/Contrast  Predict | | | Cause/Effect  Fact/Opinion  Main Idea  Summary  Point of View  Analysis | Finding Evidence  Evaluation  Detect Bias  Inference  Conclusion  Metacognition | Reasoning  Problem Solving  Goal Setting  Fluency  Elaboration  Flexibility | Originality  Risking  Inquisitiveness  Attending  Persistence  Precision |
| **Relevance to Work:** Understanding that a strong work ethic will contribute to higher productivity in organizations. | | | | | | |