

**AGRICULTURE, FOOD & NATURAL RESOURCES CAREER CLUSTER DESIGN:**

**Power, Structural & Technical Systems Pathway**

***CHECKLIST*:** ***Advanced Ag Mechanics I* (18402)**

|  |  |  |
| --- | --- | --- |
| **Standard** | **Dates Taught** | **Notes** |
| **The Ag Mechanics Industry and Careers** |
| 1. Describe 15 careers in the field of ag mechanics.
 |  |  |  |  |  |
| 1. Explain the importance of welding and construction in the local economy.
 |  |  |  |  |  |
| 1. Identify 10 regional businesses that require ag mechanic skills.
 |  |  |  |  |  |
| 1. Write a 1 and ½ page paper over two agriculture careers of interest.
 |  |  |  |  |  |
| 1. Select an agriculture career, research, and write a ½ page report over the education needed.
 |  |  |  |  |  |
| **Supervised Agriculture Experience & Record Keeping (#1)** |
| 1. Identify and maintain SAE.
 |  |  |  |  |  |
| 1. Construct a personal budget.
 |  |  |  |  |  |
| 1. Utilize the Kansas FFA SAE Record book to monitor the SAE.
 |  |  |  |  |  |
| 1. Complete a lcoal and district proficiency award applications.
 |  |  |  |  |  |
| 1. Complete chater and/or State FFA Degree applications.
 |  |  |  |  |  |
| 1. Use Quicken to track income and expense in cash, checking, and savings.
 |  |  |  |  |  |
| 1. Track SAE skills developed, hours worked as well as FFA, school, and community activities using the Ag Ed record book.
 |  |  |  |  |  |
| 1. Set appropriate SAE long and short term goals.
 |  |  |  |  |  |
| **Lab Activities** |  |  |  |  |  |
| 1. Prepare income and expense records.
 |  |  |  |  |  |
| 1. Prepare monthly cash flow statements.
 |  |  |  |  |  |
| 1. Record personal and business inventories, assets, and liabilities.
 |  |  |  |  |  |



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| **The National FFA Organization and Leadership** |
| 1. Participate in Student Development activities established by the local POA.
 |  |  |  |  |  |
| 1. Participate in Chapter Development activities established by the local POA.
 |  |  |  |  |  |
| 1. Participate in Community Development activities established by the local POA.
 |  |  |  |  |  |
| 1. Participate in the Welding and/or Ag Mechanics FFA Career Development Events.
 |  |  |  |  |  |
| **Arc Welding** |
| 1. Explain the physical process of arc welding.
 |  |  |  |  |  |
| 1. List the proper arc welding safety guidelines.
 |  |  |  |  |  |
| 1. Identify arc welding safety hazards.
 |  |  |  |  |  |
| 1. Differentiate between AC and DC welding.
 |  |  |  |  |  |
| **Lab Activities** |  |  |  |  |  |
| 1. Demonstrate an arc weld bead and pad weld.
 |  |  |  |  |  |
| 1. Demonstrate an arc weld flat butt weld.
 |  |  |  |  |  |
| 1. Demonstrate an arc weld lap weld in the flat position.
 |  |  |  |  |  |
| 1. Demonstrate an arc weld T-weld in the flat position.
 |  |  |  |  |  |
| 1. Demonstrate a multi-pass horizontal arc butt weld.
 |  |  |  |  |  |
| 1. Demonstrate a horizontal arc butt weld.
 |  |  |  |  |  |
| 1. Demonstrate a horizontal arc T-weld.
 |  |  |  |  |  |
| 1. Demonstrate a horizontal arc lap weld.
 |  |  |  |  |  |
| 1. Demonstrate a vertical butt arc weld.
 |  |  |  |  |  |
| 1. Demonstrate a vertical alp arc weld.
 |  |  |  |  |  |



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| **MIG Welding** |
| 1. List the proper MIG welding safety guidelines.
 |  |  |  |  |  |
| 1. Identify MIG welding safety hazards.
 |  |  |  |  |  |
| 1. Identify pieces of MIG welding equipment.
 |  |  |  |  |  |
| 1. Explain the physical processes of MIG welding.
 |  |  |  |  |  |
| **Lab Activities** |  |  |  |  |  |
| 1. Demonstrate a MIG bead and pad weld.
 |  |  |  |  |  |
| 1. Demonstrate a MIG flat butt weld.
 |  |  |  |  |  |
| 1. Demonstrate a MIG lap weld in the flat position.
 |  |  |  |  |  |
| 1. Demonstrate a MIG T-weld in the flat position.
 |  |  |  |  |  |
| 1. Demonstrate a MIG horizontal butt weld.
 |  |  |  |  |  |
| 1. Demonstrate a MIG horizontal lap weld.
 |  |  |  |  |  |
| 1. Demonsgtrate a MIG t-weld in the horizontal position.
 |  |  |  |  |  |
| 1. Demonstrate a MIG vertical butt weld.
 |  |  |  |  |  |
| 1. Demonstrate a MIG vertical T-weld.
 |  |  |  |  |  |
| **Oxy-Acetylene Cutting** |
| 1. List the oxy-acetylene welding and brazing safety guidelines.
 |  |  |  |  |  |
| 1. List the oxy-acetylene cutting safety guidelines.
 |  |  |  |  |  |
| 1. Explain the physical processes of oxy-acetylene welding, cutting, and brazing.
 |  |  |  |  |  |
| **Lab Activities** |  |  |  |  |  |
| 1. Demonstrate oxy-acetylene cutting techniques.
 |  |  |  |  |  |
| **Plasma Cutting** |
| 1. List the plasma cutting safety guidelines.
 |  |  |  |  |  |
| 1. Explain the processes of plasma cutting and the proper techniques involved.
 |  |  |  |  |  |
| **Lab Activities** |  |  |  |  |  |
| 1. Demonstrate plasma cutting techniques.
 |  |  |  |  |  |



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| **Standard** | **Dates Taught** | **Notes** |
| **General Shop Safety/Machine Use (#1)** |
| 1. Explain the use and functino of the bench grinder.
 |  |  |  |  |  |
| 1. Explain the use and function of the hand grinder.
 |  |  |  |  |  |
| 1. Explain the use and function of the chop saw.
 |  |  |  |  |  |
| 1. Explain the use and function of the hot saw.
 |  |  |  |  |  |
| 1. Explain the use and function of the floor sheer.
 |  |  |  |  |  |
| 1. Explain the use and function of the drill press.
 |  |  |  |  |  |
| 1. Explain the use and function of power hand drills.
 |  |  |  |  |  |
| 1. Explain the use and function of pneumatic tools.
 |  |  |  |  |  |
| 1. List the proper bench grinder safety guidelines.
 |  |  |  |  |  |
| 1. List the proper hand grinder safety guidelines.
 |  |  |  |  |  |
| 1. List the proper chop saw safety guidelines.
 |  |  |  |  |  |
| 1. List the proper hot saw safety guidelines.
 |  |  |  |  |  |
| 1. List the proper floor sheer safety guidelines.
 |  |  |  |  |  |
| 1. List the proper drill press safety guidelines.
 |  |  |  |  |  |
| 1. List the proper power hand tools safety guidelines.
 |  |  |  |  |  |
| 1. List the proper pneumatic tools safety guidelines.
 |  |  |  |  |  |
| 1. List the proper woodworking hand tool safety guidelines.
 |  |  |  |  |  |
| 1. List the proper woodworking power tool safety guidelines.
 |  |  |  |  |  |
| **Lab Activities** |  |  |  |  |  |
| 1. Demonstrate the proper bench grinder safety guidelines.
 |  |  |  |  |  |
| 1. Demonstrate the proper hand grinder safety guidelines.
 |  |  |  |  |  |
| 1. Demonstrate the proper chop saw safety guidelines.
 |  |  |  |  |  |



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| **Standard** | **Dates Taught** | **Notes** |
| **General Shop Safety/Machine Use (#2)** |
| 1. Demonstrate the proper hot saw safety guidelines.
 |  |  |  |  |  |
| 1. Demonstrate the proper floor sheer safety guidelines.
 |  |  |  |  |  |
| 1. Demonstrate the proper drill press safety guidelines.
 |  |  |  |  |  |
| 1. Demonstrate the proper power hand tools safety guidelines.
 |  |  |  |  |  |
| 1. Demonstrate the proper pneumatic tools safety guidelines.
 |  |  |  |  |  |
| 1. Demonstrate the proper woodworking tools safety guidelines.
 |  |  |  |  |  |
| **Layout and Setup of Projects** |
| 1. Read blueprints and follow detail plans for project construction.
 |  |  |  |  |  |
| 1. Make and read a working drawing.
 |  |  |  |  |  |
| 1. Estimate materials needed for a project.
 |  |  |  |  |  |
| 1. Calculate project costs.
 |  |  |  |  |  |
| 1. Prepare a bill of materials.
 |  |  |  |  |  |
| 1. Identify types of metal.
 |  |  |  |  |  |
| 1. Construct group projects.
 |  |  |  |  |  |
| 1. Construct individual projects.
 |  |  |  |  |  |
| 1. Make a project drawing on the computer.
 |  |  |  |  |  |
| **Safety/Ag Mechanics Lab Orientation** |
| 1. Identify and demonstrate proper methods of shop/lab clean-up.
 |  |  |  |  |  |
| 1. Identify various tool storage locations.
 |  |  |  |  |  |
| 1. Learn the components of the fire triangle.
 |  |  |  |  |  |
| 1. Explain the proper use of a fire extinguisher.
 |  |  |  |  |  |
| 1. Explain proper shop safety color coding.
 |  |  |  |  |  |
| **Lab Activities** |  |  |  |  |  |
| 1. Complete a shop/lab safety test with 100% accuracy.
 |  |  |  |  |  |



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| **Standard** | **Dates Taught** | **Notes** |
| **Advanced Small Engine Repair** |
| 1. Uses proper Mechanics Safety.
 |  |  |  |  |  |
| 1. Uses proper tools and operational techniques.
 |  |  |  |  |  |
| 1. Diagnose electrical System Errors – Ignition, starting, chargine.
 |  |  |  |  |  |
| 1. Diagnose Fuel Systems Errors – Gasoline, EFI, Gaseous (LP).
 |  |  |  |  |  |
| 1. Analyze Advanced Failures.
 |  |  |  |  |  |
| 1. Tear Down and Reassembly Procedures.
 |  |  |  |  |  |
| 1. Hands-On Diagnosis and Troubleshooting in a variety of areas.
 |  |  |  |  |  |
| **Mathematics** |
| 1. Estimate, apply and solve problems involving fraction, decimals, and percentages.
 |  |  |  |  |  |
| 1. Translate written and/or verbal statements into mathematical expressions.
 |  |  |  |  |  |
| 1. Convert common units of measurement within and/or across measurment systems (metric/English, etc.).
 |  |  |  |  |  |
| 1. Construct and interpret tables, charts, maps, and/or graphs.
 |  |  |  |  |  |
| 1. Apply measurement concepts of distance, direction, rate, time, and acceleration.
 |  |  |  |  |  |
| 1. Decide whether a problem is best solved with a compuer, calculator, paper and pencil, or mental arithmetic techniques.
 |  |  |  |  |  |
| **Career Development Skills** |
| 1. Follow oral instructions.
 |  |  |  |  |  |
| 1. Participate in group communication activities.
 |  |  |  |  |  |
| 1. Give oral directions.
 |  |  |  |  |  |
| 1. Use language and format appropriate to the subject matter, purpose, and audience.
 |  |  |  |  |  |
| 1. Set priorities that several tasks will be accomplished.
 |  |  |  |  |  |
| 1. Utilize time management to reduce conflicts.
 |  |  |  |  |  |
| 1. Apply rules including punctuality, attendance, and work ethic.
 |  |  |  |  |  |
| 1. Access and use information to develop educational and career options.
 |  |  |  |  |  |
| 1. Demonstrate stress management skills.
 |  |  |  |  |  |
| **Computer Literacy** |
| 1. Define, understand, and use common computer technology terms.
 |  |  |  |  |  |
| 1. Compose, organize, and edit information using a computer.
 |  |  |  |  |  |
| 1. Use presentation software to design and create a presentation.
 |  |  |  |  |  |
| 1. Use agricultural related software/websites.
 |  |  |  |  |  |
| 1. Access, navigate, and use on-line services.
 |  |  |  |  |  |
| 1. Send and receive email messages with enclosures.
 |  |  |  |  |  |
| 1. Use Quicken to manage personal finance.
 |  |  |  |  |  |
| 1. Use Microsoft Office (Word, Excel, Powerpoint, and Internet Explorer) to complete projects.
 |  |  |  |  |  |
| **Life Knowledge Lessons** |
| 1. Keeping a job.
 |  |  |  |  |  |
| 1. Advancing a career.
 |  |  |  |  |  |
| 1. Understanding the use of time.
 |  |  |  |  |  |
| 1. Life balance.
 |  |  |  |  |  |