

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

**Power, Structural & Technical Systems Pathway**

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

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| --- | --- | --- | --- | --- | --- |
| **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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| **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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| **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. |  |  |  |  |  |