

Agriculture Mechanics

Holton Agriculture Education Department

Verification Signatures _____

Hours Completed _____

Student: _____ Date: _____

Instructor: _____ Date: _____

Name: _____ SSN: _____/_____/_____

Instructor: Jason M. Larison School Year: _____

Key to Integrated Competencies

(A) - Academic {AC - Communications/English, AM-Math, AS-Science}
(CD) - Career Development (E) - Experience-Based (L) - Leadership

Circle to indicate level of competency achieved:

3 Skilled-Works Independently 2 Limited skill-Needs assistance 1 Skill undeveloped-but received instruction 0 No exposure

I. The Ag Mechanics Industry and Careers

- 3 2 1 0 1. Describe 10 careers in the field of ag mechanics
- 3 2 1 0 2. Explain the importance of welding and construction in the local economy
- 3 2 1 0 3. Identify 10 local business that require ag mechanics skills
- 3 2 1 0 4. List the causes of accidents in the workplace
- 3 2 1 0 5. Write a 1 and 1/2 page paper over two agriculture careers of interest
- 3 2 1 0 6. Select an agriculture career and research and write a 1/2 page report over the education needed.

III. The National FFA Organization and Leadership

- 3 2 1 0 1. Participate in Student Development Activities as established by the POA (L)
- 3 2 1 0 2. Participate in Chapter Development Activities as established by the POA (L)
- 3 2 1 0 3. Participate in Community Development Activities as established by the POA. (L)
- 3 2 1 0 4. Participate in the Welding and/or Ag Mechanics FFA Career Development Events. (E, L)

IV. Arc Welding

- 3 2 1 0 1. Explain the physical processes of arc welding (AS)
- 3 2 1 0 2. List the proper arc-welding safety guidelines (AS)
- 3 2 1 0 3. Identify arc-welding safety hazards (AS)
- 3 2 1 0 4. Identify pieces of arc-welding equipment (AS)
- 3 2 1 0 5. Differentiate between AC and DC welding processes (AS)

A. Lab Activities (E)

- 3 2 1 0 1. Demonstrate an arc-weld bead pad
- 3 2 1 0 2. Demonstrate an arc-weld flat butt weld
- 3 2 1 0 3. Demonstrate an arc-weld lap weld in the flat position
- 3 2 1 0 4. Demonstrate an arc-weld T-weld in the flat position

VI. Oxy-Acetylene Welding and Cutting

- 3 2 1 0 1. List the oxy-acetylene welding and brazing safety guidelines (AS)
- 3 2 1 0 2. List the oxy-acetylene cutting safety guidelines (AS)
- 3 2 1 0 3. Identify oxy-acetylene cutting, welding, and brazing equipment (AS)
- 3 2 1 0 4. Identify oxy-acetylene cutting, welding, and brazing safety hazards (AS)
- 3 2 1 0 5. Explain the physical processes of oxy-acetylene welding, cutting, and brazing (AS)

A. Lab Activities (E)

- 3 2 1 0 1. Demonstrate an oxy-acetylene bead pad
- 3 2 1 0 2. Demonstrate an oxy-acetylene butt weld in the flat position
- 3 2 1 0 3. Demonstrate an oxy-acetylene lap weld in the flat position
- 3 2 1 0 4. Demonstrate a braze bead pad
- 3 2 1 0 5. Demonstrate a braze butt weld in the flat position
- 3 2 1 0 6. Demonstrate a braze lap weld in the flat position

II. Supervised Agriculture Experience (SAE) & Record Keeping

- 3 2 1 0 1. Identify and maintain the SAE (CD)
- 3 2 1 0 2. Construct a personal budget (AM)
- 3 2 1 0 3. Utilize the Kansas FFA SAE Record book to monitor the SAE (CD)
- 3 2 1 0 4. Complete a local and district proficiency award application (L)
- 3 2 1 0 5. Complete chapter and/or State FFA Degree Applications (L)
- 3 2 1 0 6. Use Quicken to track income and expense in cash, checking, and savings (CD)
- 3 2 1 0 7. Track SAE skills developed, hours worked as well as FFA, School, and community activities using the Ag Ed record book. (CD)
- 3 2 1 0 8. Set appropriate long and short term goals for the SAE program.

A. Lab Activities

- 3 2 1 0 1. Prepare income and expense records (AM, CD)
- 3 2 1 0 2. Prepare monthly cash flow statements (AM, CD)
- 3 2 1 0 3. Record personal and business inventories, assets, and liabilities (AM, CD)

V. MIG Welding

- 3 2 1 0 1. List the proper MIG welding safety guidelines (AS)
- 3 2 1 0 2. Identify MIG welding safety hazards (AS)
- 3 2 1 0 3. Identify pieces of MIG welding equipment (AS)
- 3 2 1 0 4. Explain the physical processes of MIG welding (AS)

- 3 2 1 0 6. Demonstrate oxy-acetylene cutting techniques

VII. Machine Tool Use			
3 2 1 0	1. Explain the use & function of the bench grinder (AS)		
3 2 1 0	2. Explain the use and function of the hand grinder (AS)		
3 2 1 0	3. Explain the use and function of the chop saw (AS)		
3 2 1 0	4. Explain the use and function of the drill press (AS)		
3 2 1 0	5. Explain the use and function of the plasma cutter (AS)		
3 2 1 0	6. List the proper bench grinder safety guidelines		
3 2 1 0	7. List the proper hand grinder safety guidelines		
3 2 1 0	8. List the proper chop saw safety guidelines		
3 2 1 0	9. List the proper drill press safety guidelines		
3 2 1 0	10. List the proper plasma cutter safety guidelines		
A. Lab Activities (E)			
3 2 1 0	1. Demonstrate proper use of the bench grinder		
3 2 1 0	2. Demonstrate proper use of the angle grinder		
3 2 1 0	3. Demonstrate proper use of the chop saw		
3 2 1 0	4. Demonstrate proper use of the drill press		
3 2 1 0	5. Demonstrate proper use of the plasma cutter		
3 2 1 0	6. Demonstrate proper use of various hand tools		
VIII. Lay Out and Setup of Projects			
3 2 1 0	1. Read blueprints and follow detail plans for project construction		
3 2 1 0	2. Make and read a working drawing (AS)		
3 2 1 0	3. Estimate materials needed for a project		
3 2 1 0	4. Calculate project costs		
3 2 1 0	5. Prepare a bill of materials		
3 2 1 0	6. Identify types of metal (AS)		
3 2 1 0	7. Construct group projects		
3 2 1 0	8. Construct individual projects		
3 2 1 0	9. Make a project drawing on computer (AC)		
IX. Soil and Land Evaluation			
3 2 1 0	1. Explain the 8 various land capability classes.		
3 2 1 0	2. Evaluate physical land characteristics and explain their effect on the land class. (Soil texture, Slope, Depth, Erosion, Permeability, & Run-off) (AS)		
3 2 1 0	3. Make recommendations on land use and practices based on soil factors		
3 2 1 0	4. Interpret soil test data. (AS)		
3 2 1 0	5. Evaluate land factors based on home site considerations. (Septic System, Sewage Lagoon, Lawns and Landscape, & Foundations for Buildings).		
A. Lab Activities (E)			
3 2 1 0	1. Judge a land site pit		
3 2 1 0	2. Judge a home site pit		
3 2 1 0	3. Participate in the Land and Home site CDE		
X. Electricity in Agriculture			
3 2 1 0	1. Identify common used tools and equipment in electricity		
3 2 1 0	2. Properly demonstrate use of electricity tools		
3 2 1 0	3. Distinguish between AC and DC currents		
3 2 1 0	4. Identify common terms used in electricity		
3 2 1 0	5. Learn basic fundamentals in AC wiring to code		
3 2 1 0	6. Calculate the number of watts used by a electrical tool (AM)		
3 2 1 0	7. Calculate the number of watt-hours used by an given device (AM)		
3 2 1 0	8. Calculate an electrical bill for a given set of electrical devices (AM)		
3 2 1 0	9. Draw various wiring diagrams for different circuits		
A. Lab Activities (E)			
3 2 1 0	1. Demonstrate correct wiring of a 110 volt plug		
3 2 1 0	2. Demonstrate correct wiring of a 110 volt light		
3 2 1 0	3. Demonstrate correct wiring of a 110 volt switch		
3 2 1 0	4. Demonstrate correct wiring of a 110 volt loop circuit		
3 2 1 0	5. Use an multi-meter to test DC Volts, DC Amps, and AC Volts		
3 2 1 0	6. Use an multi-meter to test continuity of a circuit		
XI. Safety/Ag Mechanics Lab Orientation			
3 2 1 0	1. Identify and demonstrate proper methods of shop/lab clean-up		
3 2 1 0	2. Identify various tool storage locations		
3 2 1 0	3. Learn the components of the fire triangle		
3 2 1 0	4. Explain proper use of a fire extinguisher		
3 2 1 0	5. Explain proper shop safety color coding		
A. Lab Activity (E)			
3 2 1 0	1. Complete a shop/lab safety test with 100% accuracy.		
XII. Mathematics Career Development Skills (CD)			
3 2 1 0	1. Estimate, apply, and solve problems involving fractions, decimals, and percentages (AM)		
3 2 1 0	2. Translate written and verbal statements into mathematic expressions (AM)		
3 2 1 0	3. Convert common units of measurement within and/or across measurement systems (AM)		
3 2 1 0	4. Apply concepts of measurement such as distance, direction, rate, and time (AM)		
3 2 1 0	5. Construct or interpret tables, charts, maps, and/or graphs (AM)		
3 2 1 0	6. Decide whether a problem is best solved with a computer, calculator, paper and pencil, or mental arithmetic techniques (AM)		
XIII. Communications Career Development Skills (CD)			
3 2 1 0	1. Follow oral instructions (AC)		
3 2 1 0	2. Participate in group communication activities (AC)		
3 2 1 0	3. Give oral directions (AC)		
3 2 1 0	4. Use language and format appropriate to the subject matter, purpose, and audience (AC)		
3 2 1 0	5. Prepare a Powerpoint Presentation over a agriculture related topic researched in class.		
XIV. Other Career Development Skills (CD)			
3 2 1 0	1. Identify and explain the use of common supplies for a given occupational area. (CD)		
3 2 1 0	2. Set priorities in which several tasks will be accomplished (CD)		
3 2 1 0	3. Utilize time management to reduce conflicts		
3 2 1 0	4. Apply rules including punctuality, attendance, and work ethic (CD)		
XV. Computer Literacy (CD)			
3 2 1 0	1. Define, understand, and use common computer technology terms (CD)		
3 2 1 0	2. Compose, organize, and edit information using a computer (CD)		
3 2 1 0	3. Use presentation software to design and create a presentation (CD)		
3 2 1 0	4. Use ag related software/websites (CD)		
3 2 1 0	5. Access, navigate, & use on-line services (CD)		
3 2 1 0	6. Send and receive email messages with enclosures (CD)		
3 2 1 0	7. Use Quicken to manage personal finances (CD)		
3 2 1 0	8. Use Microsoft Office (Word, Excel, Powerpoint, and Internet Explorer) to complete projects (CD)		