

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

**Power, Structural & Technical Systems Pathway**

***CHECKLIST*:** ***Ag Fabrication* (18409)**

|  |  |  |
| --- | --- | --- |
| **Standard** | **Dates Taught** | **Notes** |
| **Ag Mech Orientation** |
| 1. Identify career opportunities in ag fabrication.
 |  |  |  |  |  |
| 1. Identify levels of education for fabrication careers.
 |  |  |  |  |  |
| **Obtaining a Job** |
| 1. Writing letters of application.
 |  |  |  |  |  |
| 1. Filling out the job application.
 |  |  |  |  |  |
| 1. Developing the resume.
 |  |  |  |  |  |
| 1. Preparing for the interview.
 |  |  |  |  |  |
| 1. Interviewing techniques.
 |  |  |  |  |  |
| 1. Job Benefits & forms.
 |  |  |  |  |  |
| 1. Investing job earnings.
 |  |  |  |  |  |
| **Practice Safe Work Habits** |
| 1. Pass safety exam with 100% accuracy.
 |  |  |  |  |  |
| 1. Keep lab & work area clean and orderly.
 |  |  |  |  |  |
| 1. Wear proper clothing and eye protection.
 |  |  |  |  |  |
| 1. Use appropriate guards and shields.
 |  |  |  |  |  |
| 1. Identify hazardous conditions.
 |  |  |  |  |  |
| 1. Observe safety practices when operating:
 |  |  |  |  |  |
| 1. power & hand tools
 |  |  |  |  |  |
| 1. arc welding equipment
 |  |  |  |  |  |
| 1. oxyacelene equipment
 |  |  |  |  |  |
| 1. plasma cutting equipment
 |  |  |  |  |  |
| 1. metal shearing equipment
 |  |  |  |  |  |



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| **Metalurgy** |
| 1. Understand physical & chemical properties of metals.
 |  |  |  |  |  |
| 1. Explain steel classification & identification.
 |  |  |  |  |  |
| 1. Differentiate between carbon and alloy steels.
 |  |  |  |  |  |
| 1. Recognize standard steel shapes.
 |  |  |  |  |  |
| 1. Identify metals using spark test.
 |  |  |  |  |  |
| 1. Analyze the impact heat treament processes:
 |  |  |  |  |  |
| 1. stress relieving
 |  |  |  |  |  |
| 1. normalizing
 |  |  |  |  |  |
| 1. annealing
 |  |  |  |  |  |
| 1. hardening & tempering
 |  |  |  |  |  |
| 1. Relate heat treatment & grain size to metal strength.
 |  |  |  |  |  |
| 1. Define eutectoid point.
 |  |  |  |  |  |
| 1. Relate color change to hardness.
 |  |  |  |  |  |
| **Joint Design & Welding Symbols** |
| 1. Identify the types of weld joints.
 |  |  |  |  |  |
| 1. Analyze the joint design for strength and application.
 |  |  |  |  |  |
| 1. Explain the components of welding symbols.
 |  |  |  |  |  |
| 1. Apply welding symbols to blueprints.
 |  |  |  |  |  |
| 1. Identify symbols for specific welds.
 |  |  |  |  |  |
| **Material Layout and Selection** |
| 1. Explain the importance of efficient material layout.
 |  |  |  |  |  |
| 1. Perform material layout.
 |  |  |  |  |  |
| 1. Analyze material shape for strength & application.
 |  |  |  |  |  |
| 1. Calculate material cost.
 |  |  |  |  |  |
| 1. Compute bill of materials.
 |  |  |  |  |  |



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| **Gas Metal Arc Welding** |
| 1. Review GMAW processes.
 |  |  |  |  |  |
| 1. Perform welds in 1G, 1F, 2G, 2F, 3G, 3F, 4G, 4F.
 |  |  |  |  |  |
| 1. Perform welds using short circuit.
 |  |  |  |  |  |
| 1. Perform welds using spray arc.
 |  |  |  |  |  |
| 1. Read charts & determine equipment settings.
 |  |  |  |  |  |
| 1. Perform welding using flux core welding.
 |  |  |  |  |  |
| **TIG Welding** |
| 1. Describe the TIG welding process.
 |  |  |  |  |  |
| 1. Identify the parts of the tig welder.
 |  |  |  |  |  |
| 1. Select & prepare electroe for variety of applications.
 |  |  |  |  |  |
| 1. Perform welds for 1F, 1G:
 |  |  |  |  |  |
| 1. Aluminum
 |  |  |  |  |  |
| 1. Steel
 |  |  |  |  |  |
| **Gas & Plasma Welding & Cutting** |
| 1. Describe the science of welding/cutting processes.
 |  |  |  |  |  |
| 1. Identify safety practices.
 |  |  |  |  |  |
| 1. Select gas welding & plasma cutting equipment.
 |  |  |  |  |  |
| 1. Understand withdraw rates relationship to equip size.
 |  |  |  |  |  |
| 1. Cut mild steel, including pipe.
 |  |  |  |  |  |
| 1. Layout pipe joints and cut utilizing OA & plasma.
 |  |  |  |  |  |
| 1. Perform gouging processes.
 |  |  |  |  |  |
| 1. Analyze the cause of distortion & how to correct.
 |  |  |  |  |  |
| 1. Explain processes of machine cutting.
 |  |  |  |  |  |



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| **Production Processes** |
| 1. Select welding process for specific application.
 |  |  |  |  |  |
| 1. Identify time saving techniques for production work:
 |  |  |  |  |  |
| 1. jigs & fixtures
 |  |  |  |  |  |
| 1. multiple machine operations
 |  |  |  |  |  |
| 1. stops & guides
 |  |  |  |  |  |
| 1. Anticipate distortion from welding processes.
 |  |  |  |  |  |
| 1. Read metal working plans and prints.
 |  |  |  |  |  |
| 1. Calculate metal costs.
 |  |  |  |  |  |
| 1. Determine welding costs.
 |  |  |  |  |  |
| **Project Selection & Working Drawings** |
| 1. Select potential project for construction.
 |  |  |  |  |  |
| 1. Evaluate existing designs.
 |  |  |  |  |  |
| 1. Develop working drawings of project to include:
 |  |  |  |  |  |
| 1. measurements
 |  |  |  |  |  |
| 1. material selection
 |  |  |  |  |  |
| 1. exploded views necessary
 |  |  |  |  |  |
| 1. multiple views
 |  |  |  |  |  |
| 1. create bill of materials
 |  |  |  |  |  |
| **Project Construction** |
| 1. Develop plan of actiom for project.
 |  |  |  |  |  |
| 1. Determine material needs.
 |  |  |  |  |  |
| 1. Evaluate sources of material for most economic.
 |  |  |  |  |  |
| 1. Construct project following safety procedures.
 |  |  |  |  |  |
| 1. Utilize time saving techniques to increase efficiency.
 |  |  |  |  |  |
| 1. Utilize distortion methods.
 |  |  |  |  |  |
| 1. Write final report on project to include:
 |  |  |  |  |  |
| 1. description of features
 |  |  |  |  |  |
| 1. safety considerations
 |  |  |  |  |  |
| 1. bill of materials
 |  |  |  |  |  |
| 1. skills utilized in construction
 |  |  |  |  |  |



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| **FFA & SAE** |
| 1. Evaluate and compare different types of SAE L2A
 |  |  |  |  |  |
| 1. Select SAE best souted to ind needs based on Interest, skill ability and opportunities L2B
 |  |  |  |  |  |
| 1. Plan an implement individual SAE.
 |  |  |  |  |  |
| 1. Use skills learned in class to enhance SAE.
 |  |  |  |  |  |
| 1. Apply skills learned in class to compete in Ag Mech CDE.
 |  |  |  |  |  |
| 1. Record entries in a & evaluate SAE record book.
 |  |  |  |  |  |
| 1. Income, expenses, cash flow, inventories & depreciation.
 |  |  |  |  |  |
| 1. Analyze and revise SAE to maximize profit.
 |  |  |  |  |  |
| 1. Examine goals and future plans for SAE.
 |  |  |  |  |  |
| 1. Use Record book to complete application for:
 |  |  |  |  |  |
| 1. Greenhand, chapter or state FFA degree
 |  |  |  |  |  |
| 1. District & State Proficiency awards
 |  |  |  |  |  |



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| **Time Management** |
| 1. Define the following terminology.
 |  |  |  |  |  |
| 1. Time Management
 |  |  |  |  |  |
| 1. Procrastination
 |  |  |  |  |  |
| 1. Priority
 |  |  |  |  |  |
| 1. consequences
 |  |  |  |  |  |
| 1. Incentive
 |  |  |  |  |  |
| 1. Dovetail tasks
 |  |  |  |  |  |
| 1. List Benefits of setting goals.
 |  |  |  |  |  |
| 1. Id short and long-term goals.
 |  |  |  |  |  |
| 1. Determine priorities in personal life.
 |  |  |  |  |  |
| 1. List influences on use of time.
 |  |  |  |  |  |
| 1. Identify time traps.
 |  |  |  |  |  |
| 1. Idntify personal "time wasters.”
 |  |  |  |  |  |
| 1. State principles of efficient time management.
 |  |  |  |  |  |
| 1. Identify reasons for procrastination.
 |  |  |  |  |  |
| 1. List ways to overcome procrastination.
 |  |  |  |  |  |
| 1. Develop habits that save time.
 |  |  |  |  |  |
| 1. Identify effective study habits.
 |  |  |  |  |  |
| **Teamwork Skills** |
| 1. Participate in team tasks.
 |  |  |  |  |  |
| 1. Establish team goals.
 |  |  |  |  |  |
| 1. Establish team standards.
 |  |  |  |  |  |
| 1. Receive and give information.
 |  |  |  |  |  |
| 1. Process information.
 |  |  |  |  |  |
| 1. Plan for action.
 |  |  |  |  |  |
| 1. Complete team task on time.
 |  |  |  |  |  |



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| **Work Ethics** |
| 1. Interpret workplace policies related to:
 |  |  |  |  |  |
| 1. Safety
 |  |  |  |  |  |
| 1. Personal Hygiene
 |  |  |  |  |  |
| 1. Personal leave & absence
 |  |  |  |  |  |
| 1. Substance abuse
 |  |  |  |  |  |
| 1. Sexual harassment
 |  |  |  |  |  |
| 1. Apply rules, regulations & policies:
 |  |  |  |  |  |
| 1. Punctuality and dependability
 |  |  |  |  |  |
| 1. Responsibility for position
 |  |  |  |  |  |
| 1. Accuracy
 |  |  |  |  |  |
| **Listening Skills** |
| 1. Follow oral instructions.
 |  |  |  |  |  |
| 1. Distinguish fact, opinion, and inference.
 |  |  |  |  |  |
| 1. Interpret nonverbal cues.
 |  |  |  |  |  |
| 1. Analyze speakers point of view.
 |  |  |  |  |  |
| **Computer Skills** |
| 1. Compose, organize & edit information w/ computer.
 |  |  |  |  |  |
| 1. Use presentation software.
 |  |  |  |  |  |
| 1. Use industry specific software.
 |  |  |  |  |  |
| 1. Access & use online services.
 |  |  |  |  |  |
| 1. Send and receive email, voicemail & fax.
 |  |  |  |  |  |
| 1. Use software to store, sort, query & receive data.
 |  |  |  |  |  |
| **Writing**  |
| 1. Use correct language, organization and format.
 |  |  |  |  |  |
| 1. Check, edit, and revise for correct information.
 |  |  |  |  |  |
| 1. Create & present tech data in charts & graphs.
 |  |  |  |  |  |
| 1. Maintain records, logs, lab notbooks.
 |  |  |  |  |  |
| 1. Use style manuals or software for documentation.
 |  |  |  |  |  |