

**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. |  |  |  |  |  |