ENGINEERING & TECHNOLOGY

Dept. RO

4-H members must be currently enrolled in the Kansas 4-H STEM project to exhibit in this department. Exhibits must have been completed during the current 4-H year.
Each exhibitor may enter one exhibit per class.

STEM AGMECHANICS

The Ag Mechanics project is starting with an emphasis on welding and smithing, it will expand as the project area grows. Please direct project feedback to Shane Potter. This project allows youth to explore areas of ag mechanics and metallurgy from repairing or repurposing items to the fabrication of new items. The intent is for this program to start with foundational areas, some of which youth may already have, and allow them to continue to build on this knowledge, becoming more experienced.
Rules
1. 4-H members must be currently enrolled in the Kansas 4-H Engineering & Tech Ag Mechanics (welding) project to exhibit in this division.
2. Each exhibitor may enter one exhibit per class. Exhibits must have been constructed or repaired during the current 4-H year. The exhibit must have been selected at the county level for entry to the State Fair. Counties or districts should select only top blue or purple ribbon Ag Mechanics exhibits which meet State Fair guidelines.
3. Wheeled exhibits must utilize a braking mechanism which prevents the exhibit from freely rolling while on display.
4. Exhibitors are responsible for providing sufficient braking or “chocks” for trailer exhibits to ensure that the exhibits do not move once positioned. If using a wheel "chocking” mechanism, the two individual blocks should be connected together as a pair of chocks, so they do not become separated. At least one pair of chocks should be placed on each side of the trailer to prevent movement.
5. For trailer exhibits the tongue of the trailer should have a locking mechanism (e.g. padlock) to prevent the trailer from being moved by unauthorized individuals while being displayed. A key for the locking mechanism should be left with the superintendent and labeled with the exhibitor’s name, county, and phone number.
6. Each exhibit must be free-standing or sufficiently supported by an exhibitor supplied support system that is moveable and is part of the total demission’s and weight of the exhibit as described previously. Exhibit boards should have a portable and moveable base. No exhibits may be staked to the ground for display.
7. Top heavy items should be braced or placed in a stand sufficient to prevent it from toppling over while on display.
8. Exhibits may not be bound, affixed, or attached to the State Fair buildings, except by the superintendent, State Fair Staff, or State Fair Extension Staff.
9. Painting or spot painting is not allowed on projects after arrival at fairgrounds. If wet paint is detected by judges or superintendents one ribbon placing will be deducted.
10. Repair projects having adequate original finish need not be repainted.
11. Cutting surfaces, such as blades, are to have a protective covering over them to prevent injury. The covering should be easily removed and reinstalled for judging. Foam “pool noodles” and multiple layers of cardboard are acceptable.

12. Display cases for small exhibits are acceptable and must be easily opened so the item can be removed and examined as part of judging.
13. Exhibits that include weaponry of any kind will be disqualified. Weaponry is defined as any instrument, possession, or creation, physical and/or electrical that is intended to be used to inflict damage and/or harm to individuals, animal life, and/or property.
14. Trailers may be displayed outside.
15. If the exhibit is powered by flammable liquids (gas, propane, kerosene, etc.) the fuel tank and lines should be drained and allowed to dry, to avoid spills and potential fires.
16. Electric powered (battery, corded, solar, or alternative energy) should have a primary shutoff or disconnect switch.
17. If a safety violation is noted by the judges, superintendent, or other staff, the exhibitor's exhibit, at the judges' discretion, will receive a deduction in ribbon placement or a participation ribbon.
18. The exhibitor's name(s) and county or district must be tagged or labeled in a prominent location on the display.
19. Each exhibit must include an Ag Mechanics information packet. Entry of just a packet without an accompanying exhibit is not a sufficient exhibit.
20. Each exhibitor is required to complete the "4-H Engineering & Tech Ag Mechanics Exhibit Information Form" which is available through your local K-State Research and Extension office or http://welding.engtech4ks.com. This form must be attached to the outside of a 10" x 13" manila envelope. Do not tie the envelope to the exhibit. All revisions of all forms previously released for the STEM division dated prior to current year are void for use and new forms must be obtained and used that are dated by the State 4-H Office for the current year.
21. Each exhibit information packet should include the following items:
a. Bill of materials for the project with associated costs, scrap items used may be listed as having a $0.00 cost.
b. 1 to 5 pages of photos showing work on the exhibit, preferably from a beginning state to final or completed state.
c. If appropriate schematics or working drawings relating to the creation or repair, this is not required for display boards.
d. If appropriate operating instructions.
22. Additionally, exhibitors may create an optional video (not required) about their project showing its operation and the work they have done. This allows judges to get a better understanding of the exhibit and allows the youth the opportunity to fully demonstrate their exhibit. The video should be no longer than 8 minutes and should be placed on a USB drive. These videos may also be considered for inclusion in a running video loop in the Engineering & Tech area at the state fair after review by judges, superintendent(s), and extension staff. Adult guardians must complete the video release included with the exhibit form. If the release is not completed the video will not be included in the video loop on display in the Engineering & Tech area at the Kansas State Fair.
a. For the Barton County Fair with consultation judging, it is recommended that the video elements be waived in favor of talking with the exhibitor.
23. Ag Mechanics exhibits may be checked out for use in a Kansas State Fair 4-H demonstration or 4-Hillustrated talk with prior permission. For permission, check with

the superintendent. The exhibit must be returned to display immediately after the demonstration/illustrated talk, or the exhibit will be disqualified.
Eligibility – Each exhibitor may enter one exhibit per class. Exhibits must have been constructed or repaired during the current 4-H year. The exhibit must have been selected at the county level for entry at the State Fair. Counties or districts should select only top blue or purple ribbon Ag Mechanics exhibits which meet State Fair guidelines.
Scoresheets, Forms, and Contest Study Materials:
•4-H Engineering & Tech Ag Mechanics Exhibit Information Form at http://welding.engtech4ks.com.
Classes
Introductory – **Level 1 (about 1 - 3 years' experience)**
This level is designed for youth with little to no exposure in the project area so that they can gain an understanding of basic principles and methods in the given area.
5550 Welding Display Board. A 3' x 3' display board with different pieces of metal attached illustrating
different types of welds, each weld being labeled.
5551 Level 1 Welding Ag Repair. Repair of ag equipment with welding.
5552 Level 1 Welding Ag Fabrication. Creation of new ag equipment with welding.
5553 Level 1 Welding General Repair. Repair of non-ag equipment with welding.
5554 Level 1 Welding General Fabrication. Creation of non-ag equipment with welding.
5555 Level 1 Welding Artistic Fabrication. Creation of artistic or interpretive pieces with welding.
5556 Level 1 Other Metalwork.
5557 Level 1 Brazing Fabrication.
5557 Smithing Display Board. A 3' x 3' display board with different pieces of forged metal
attached illustrating different forms, each form being labeled.
5558 Level 1 Smithing. A design forged with at least **one** formed element (twists or spirals for example).
Experienced – Level 2 (about 4 - 6 years' experience)
This level is designed for youth some experience in the project area allowing them to expand on common principles and methods in the given area.
5559 Level 2 Welding Ag Repair. Repair of ag equipment with welding.
5560 Level 2 Welding Ag Fabrication. Creation of new ag equipment with welding.
5561 Level 2 Welding General Repair. Repair of non-ag equipment with welding.
5562 Level 2 Welding General Fabrication. Creation of non-ag equipment with welding.
5563 Level 2 Welding Artistic Fabrication. Creation of artistic or interpretive pieces with welding.
5564 Level 2 Other Metalwork.
5565 Level 2 Smithing. A design forged with at least **two** different formed elements (twists and spirals for example).
Advanced – Level 3 (about 7 - 9 years' experience)
This level is designed for youth with vast experience in the project area allowing them to master common principles and methods and expand on advanced techniques in the given area.
5566 Level 3 Welding Ag Repair. Repair of ag equipment with welding.

5567 Level 3 Welding Ag Fabrication. Creation of new ag equipment with welding.
5568 Level 3 Welding General Repair. Repair of non-ag equipment with welding.
5569 Level 3 Welding General Fabrication. Creation of non-ag equipment with welding.
5570 Level 3 Welding Artistic Fabrication. Creation of artistic or interpretive pieces with welding.
5571 Level 3 Other Metalwork.
5572 Level 3 Smithing. A design forged with at least three different formed elements (twists, spirals and bulbs for example)**.**
Master – Level 4 (10 or more years' experience) This level is designed for youth with substantial experience in the project area allowing them to master advanced techniques in the given area.
5573 Level 4 Welding Ag Repair. Repair of ag equipment with welding.
5574 Level 4 Welding Ag Fabrication. Creation of new ag equipment with welding.
5575 Level 4 Welding General Repair. Repair of non-ag equipment with welding.
5576 Level 4 Welding General Fabrication. Creation of non-ag equipment with welding.
5577 Level 4 Welding Artistic Fabrication. Creation of artistic or interpretive pieces with welding.
5578 Level 4 Other Metalwork.
5579 Level 4 Smithing. A design forged with at least **four** different elements (twists, spirals and bulbs for example.)

A Grand and Reserve Grand Champion will be selected from all Engineering & Technology Class Champions and Reserve Champions.