

DEPARTMENT – BUILDING EXHIBITS

SECTION –ROBOTICS

(Must be enrolled in Robotics)

SECTION - ROBOTICS

1. Read General and Special Rules. Violation of any of the following rules may result in disqualification. All decisions will be made by a county agent and their decision is final.
2. Member must be currently enrolled in Robotics.
3. Each exhibitor may enter one robot per class. Exhibit must have been constructed and/or completed during the current 4-H year. Only top blue or purple ribbon robot exhibits which meet State Fair guidelines should be selected for entry at the State Fair.
4. Each robot must be free-standing, without the need for additional supports in order to be moved or exhibited. Each exhibit must include a robot. Information packets are not a sufficient exhibit.
5. Robots must have automated articulated structures (arms, wheels, grippers, pneumatic, hydraulic, etc.). Game consoles that display on a screen are not considered robots and should either be entered in computer systems division or electronics and renewable energy project. Robots requiring no assembly, just programming, such as Ozobots, are considered computer systems projects as the skill is focused on the programming not on the construction of the robot.
6. Robot dimensions should not exceed 2 feet high, by 2 feet wide, by 2 feet deep. If displayed in a case (not required) the outside case dimensions may not be more than 26 inches in height, width, or depth.
7. Materials including but not limited to obstacles, spare batteries, and mats for testing the robot may be placed in a separate container, which is not included in the robots dimensions, that container may not be larger than 576 cubic inches as measured along the outside of the container. (Examples: 4"X4"X36" or 4"X8"X18" or 6"X6"X16) The container, if used, and/or any large objects (such as mats or obstacles) should be labeled with the exhibitor's name(s) and county or district.
8. All electric components of the robot must be adequately covered or concealed with a protective enclosure. Paper is NOT considered an adequate enclosure or covering for electrical components.
9. Robots may be powered by an electrical, battery, water, air or solar source only. Junk Drawer robots may be powered by a non-traditional power source. Robots powered by fossil fuels/flammable liquids will be disqualified. Robots that include weaponry of any kind will be disqualified. Weaponry is defined as any instrument, possession or creation, physical and/or electrical that could be used to inflict damage and/or harm to individuals, animal life, and/or property.
10. Remote controlled robots are allowed under certain conditions provided that the robot is not drivable. Robots programmed on phones/tablets need to have a specific program created, using motion controls to move the robot are not acceptable, for example "press forward on the screen to make the robot go forward." Remote controlled cars, boats, planes and/or action figures, etc. are not allowed. Robotic arms (hydraulic or electric) are allowed. A remote is allowed provided more than a single action happens when a single button is pressed on the remote, for example "a motor spins for 3 seconds, at which point an actuator is triggered, then the motor spins for 3 more seconds."
11. Each robot must be in working condition. The judges will operate each robot to evaluate its workmanship and its ability to complete the required tasks. In the event the robot uses a phone, tablet, or similar device for programming AND control of the robot, a video will be used to evaluate the working condition of the robot.
12. Each exhibitor is required to complete the "4-H Robotics Exhibit

Information Form” which is available through the Extension Office or at <http://robotics.engtech4ks.com/>. This form must be attached to the outside of a 10” x 13” manila envelope. For the LVCO Fair, the construction plans must also be included in this manila envelope. Must comply with additional instructions if selected for the State Fair.

13. The exhibit must include clear, detailed, step-by-step written instructions for operation, construction plans, and one to three pages of project photographs. For robots that can be programmed, robot programming information must be included. This information should be placed inside the 10” x 13” manila envelope mentioned above. The exhibitor may enter their electronics and renewable energy project listed under the electric program if the exhibitor so chooses. Robot programming information can be, but not limited to, source code, block diagrams, screen captures of the coding window, and other images that show the programming logic used.
14. Creativity, workmanship, and functionality will be strong criteria in judging the “Robot designed by Exhibitor” classes. All robots should have a purpose or intended function, examples include, but are not limited to: following a line, sweeping the floor, solving a rubix cube, sorting colors, or climbing stairs.
15. Exhibitors name(s) and county must be tagged or labeled in a prominent location on the robot.
16. See the last section for full details about exhibiting posters, display boards and notebooks.
17. If a safety violation is noted by the judges, superintendents, or other staff, the exhibitor’s exhibit, at the judges’ discretion, will receive a participation ribbon.

CLASSES – *Division A- NOVICE- Ages 7 & 8. (Div A is not eligible for state fair)*

5505: NOVICE – Robot made from a commercial (purchased) kit

5506: NOVICE - Robot designed and constructed by exhibitor

Robot must not be a mere modification of an existing robot kit or plan.

5507: NOVICE - Programmable robot made from a commercial (purchased) kit

5519: NOVICE – Robot designed and constructed by exhibitor or from a commercial kit, that is operated by a remote controlled device

5543: NOVICE - Junk Drawer Robotics – based curriculum robot

Division B – INTERMEDIATE – Ages 9 - 13

5509: INTERMEDIATE - Robot made from a commercial (purchased) kit (No programming, Just assembly)

5510: INTERMEDIATE - Robot designed and constructed by exhibitor

The robot must not be a mere modification of an existing robot kit or plan.

5511: INTERMEDIATE - Programmable robot made from a commercial (purchased) kit

5544: INTERMEDIATE - Junk Drawer Robotics

5546 :INTERMEDIATE – Robot designed and constructed by exhibitor or from a commercial kit, that is operated by a remote controlled device.

Division C - Senior – Ages 14-18

5513: SENIOR - Robot made from a commercial (purchased) kit (No programming, Just assembly)

5514: SENIOR - Robot designed and constructed by exhibitor

The robot must not be a mere modification of an existing robot kit or plan.

5515: SENIOR - Programmable robot made from a commercial (purchased) kit

5545: SENIOR - Junk Drawer Robotics

5547: SENIOR –Robot designed and constructed by exhibitor or from a commercial kit, that is operated by a remote-controlled device.

Division D – Team Robotics Project

5517: Robots designed and constructed by two or more

The robot must not be a mere modification of an existing robot kit or plan. The robot may be a programmable type that is made from a commercial (purchased) kit. This division is designed to encourage teamwork and cooperation among fellow 4-H Robotic members. As with many high tech projects today, no one person designs and builds a robot alone. It takes the brainstorming, planning, problem solving, and cooperation of an entire team to complete a given robotics project.

4-H ROBOTIC EDUCATIONAL EXHIBITS – POSTERS, NOTEBOOKS AND DISPLAY BOARDS

1. For notebooks, display boards, and posters, no additional exhibit information is required; no manila envelope is needed for these exhibits.
2. Exhibits are to have a clear link to the Engineering and Technology areas.
3. Exhibits in posters, notebooks and display boards must contain substantial supporting educational materials.
4. Educational display boards, posters and notebooks should be creative and showcase details about the knowledge learned in the project during the current 4-H year. Value is placed on youth who can demonstrate how their skills have increased while completing the project. Each exhibit will be judged on uniqueness, creativity, neatness, accuracy of material, knowledge gained, and content. An exhibit judging score sheet available at <http://robotics.engtech4ks.com/>.
5. Follow copyright laws, citing all sources of information in a standard notation Sources of information must be cited on the front of your exhibit, including all posters and educational display boards.
6. Educational displays are not to exceed a standard commercial 4' high X 3' wide X 2' deep. No card table exhibits will be allowed. Care should be taken to use durable materials that will withstand Kansas State Fair conditions.
7. Posters are limited to commercial 3' X 4' tri-fold display boards.
8. "Construction Kits" that are part of Educational displays must be contained in cases (tackle boxes, sealable containers, etc.) that may not be larger than 1' x 2' x 2' and must have a latch which securely keeps all components contained in the "Construction Kits". Other components are to adhere to appropriate dimensions as stated elsewhere.
9. Educational Project notebooks must be organized in a 3-ring binder.
10. Any three-dimensional poster or display board exhibits may not be thicker than 2 inches.
11. Exhibitor's name, county, or district, age, and year(s) in project must be tagged or labeled on the back of the exhibit. Exhibit cards are not sufficient as they may be removed or repositioned for display. Failure to label an exhibit may result in one ribbon placing deduction.
12. Exhibits should possess the following qualities (in no particular order): a. A central theme b. What you want others to learn c. Be designed and constructed in a manner befitting the exhibit d. Be something you are interested in
13. If a safety violation is noted by the judges, superintendent, or other staff, the exhibitor's exhibit, at the judge's discretion, will receive a participation ribbon.
14. Posters, Notebooks, and Display Boards may be checked out for use in a Kansas State Fair 4-H demonstration or illustrated talk with prior permission. For permission, check with the superintendent(s). The exhibit must be returned to display immediately after the demonstration/illustrated talk, or the exhibit will be disqualified.

Robotics Division A - Novice – Ages 7-8 (Not State Fair Eligible)

- 5751 Robotics Educational Display
- 5752 Robotics Educational Notebook
- 5753 Robotics Educational Poster

Robotics Division B – Intermediate – Ages 9-13

- 5756 Robotics Educational Display
- 5757 Robotics Educational Notebook
- 5758 Robotics Educational Poster

Robotics Division C – Senior – Ages 14 and up

- 5761 Robotics Educational Display
- 5762 Robotics Educational Notebook
- 5763 Robotics Educational Poster

Robotics Division D – Team Robotics Project

- 5766 Team Robotics Educational Display
- 5767 Team Robotics Educational Notebook
- 5768 Team Robotics Educational Poster