ROBOTICS

1. 4-H members must be currently enrolled in the Kansas 4-H STEM - Robotics project to exhibit in this division.
2. Each exhibitor may enter one robot per class. Exhibit must have been constructed and/or completed during the current 4-H year.
3. 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.
4. Robots must have automated articulated structures (arms, wheels, grippers, etc.). Game consoles that display on a screen are not considered robots and should either be entered in computer system division or energy management project. Robots requiring no assembly, just programming, such as Ozobots, are considered computer system projects as the skill is focused on the programming not on the construction of the robot.
5. Robot dimensions should not exceed 2 feet high, by 2 feet wide, by 2 feet deep. Weight may not exceed 15 pounds. If displayed in a case (not required or encouraged) the outside case dimensions may not be more than 26 inches in height, width, or depth.
6. 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 exhibitors name(s) and county or district.
7. 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.
8. 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.
9. Remote controlled robots are allowed under certain conditions provided that the robot is not drivable. 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.” Remote controlled cars, boats, planes and/or action figures, etc. are not allowed.
10. Each robot must be in working condition. The judges will operate each robot to evaluate its workmanship and its ability to complete year its intended task. 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.
11. Each exhibitor is required to complete the “4-H STEM Robotics Exhibit Information Form” which is available at www.STEM4KS.com. This form must be attached to the outside of a 10” x 13” manila envelope.
12. The exhibit must include written instructions for operation (the instructions should be written as if they were to tell a grandparent or elderly person how to
operate the robot), construction plans, and one to three pages of project photographs. In addition a 5 minute video presentation placed on a CD, DVD, USB drive, or similar removable storage device, if applicable. 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 electronic project listed under the energy management program if the exhibitor so chooses. No exhibitor will be allowed to set up their robot in person.

13. In the event that the robot uses a device like a phone, iPad, or tablet for programming AND operation, DO NOT include the device (phone, tablet, etc.). The device’s safety cannot be insured. Instead record a video demonstrating the instructions included for your robot. It should show, setting up the robot, starting the robot, the robot executing its task, and powering off the robot, just like the instructions are written.

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. Exhibitor’s name(s) and county or district 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.

Junior - 7-8 years of Age (Not eligible for State Fair)
*Class 5505 - Robot made from a commercial (purchased) kit.
*Class 5506 - Robot designed and constructed by exhibitor. The robot must not be a mere modification of an existing robot kit or plan.
*Class 5507 - Programmable robot made from a commercial (purchased) kit.
*Class 5519 - Robot designed and constructed by exhibitor or from a commercial kit, that is operated by a remote controlled device
*Class 5543 - Junk Drawer Robotics

Intermediate - Ages 9-13
Class 5509 - Robot made from a commercial (purchased) kit. (No programming, just assembly.)
Class 5510 - Robot designed by exhibitor. The robot must not be a mere modification of an existing robot kit or plan.
Class 5511 - Programmable robot made from a commercial (purchased) kit.
Class 5546 - Robot designed and constructed by exhibitor or from a commercial kit, that is operated by a remote controlled device.
Class 5544 - Junk Drawer Robotics

Senior - Ages 14 and Up
Class 5513 - Robot made from a commercial (purchased) kit (No programming, just assembly)
Class 5514 - Robot designed by exhibitor. The robot must not be a mere modification of an existing robot kit or plan.
Class 5515 - Programmable robot made from a commercial (purchased) kit.
Class 5547 - Robot designed and constructed by exhibitor or from a commercial kit, that is operated by a remote controlled device.
Class 5545 - Junk Drawer Robotics

Team Robotics Project
Class 5517 - Robot designed and constructed by two or more 4-H STEM project members. 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 STEM 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.