

# Montgomery County Fair Ag Robotics

## Contest Rules & Rules of Play

January 22, 2024 – Online application entry will begin at 9:00 am.

February 2, 2024 – All Applications must be submitted online by 5:00 pm.

February 6, 2024 – Teams notified of selection to participate.

February 9, 2024 – Confirmation of participation is due along with the entry fee.

April 19, 2024 – Contest at Exhibit Building on the Montgomery County Fairgrounds.

1. This Division is subject to the General Rules of the Montgomery County Fair Association and these Division Rules.
2. **Participation.** Participants must be 4-H and FFA members or members of school-affiliated Robotics Programs in Montgomery County.
3. **Age Divisions.** Age divisions are determined by a participant's grade as of September 1 of the current school year.
  - Junior Grades 3, 4, and 5  
The minimum age is 8 years old and in the 3<sup>rd</sup> grade
  - Intermediate: Grades 6, 7, and 8
  - Senior: Grades 9, 10, 11, and 12
3. **Entries.** Due to facility limitations, a maximum of 54 teams will be accepted. Teams shall be submitted by their respective School representatives and 4-H/FFA Club Sponsor/Teacher. Any team wishing to participate must submit an application by **February 2, 2024, at 5:00 pm.**
  - 18 entries per age division (totaling 54 entries).
  - If the 18 entries per age division are exceeded, a random draw entry process will be utilized to determine the 18 entries.
  - If any age division's maximum total is not reached, and there are extra applicants in the other age divisions, the available spots will be backfilled with those applicants. A random draw entry process will be utilized if the additional applicants exceed the maximum of 54 teams.
4. **Cost.** An entry fee of \$40.00 will be collected per team entry after participants are selected and announced
5. **Members per team.** A team will consist of at least two (2) and no more than six (6) members. No Mixed Divisions (no Juniors mixed with Seniors etc.)
6. **Equipment.** Each team must supply their own equipment for the challenge. Each team may only bring the supplies listed below. Equipment will be checked by contest officials as teams check in for the contest. Any extra equipment or item that does not meet specifications will be returned to the team coach.

**Equipment List:**

Unlimited Quantity	Lego® Mindstorm® NXT, EV3, Spike Prime, or Inventor building pieces (excludes brick, motors, and sensors)
Unlimited Quantity	Backup rechargeable batteries or sets of AA batteries
1	Lego® Mindstorm® NXT, EV3, Spike Prime, or Inventor brick/hub
Unlimited Quantity	Lego® Mindstorm® NXT, EV3, Spike Prime, or Inventor motors
Unlimited Quantity	Lego® Mindstorm® NXT, EV3, Spike Prime, or Inventor ultrasonic sensor
Unlimited Quantity	Lego® Mindstorm® NXT, EV3, Spike Prime, or Inventor touch/force sensor
Unlimited Quantity	Lego® Mindstorm® NXT, EV3, Spike Prime, or Inventor light or color sensor
Unlimited Quantity	Lego® Mindstorm® EV3 gyro sensor
2	Laptop computer or tablet with programming software (Lego® or non-Lego® is acceptable)
1 or 2	USB Cable (for robot-computer connection)
1	Original Lego® Mindstorm® NXT, EV3, Spike Prime, or Inventor Build Plans (paper or digital)
Unlimited Quantity	Power strip (3-prong, grounded) *
1	25 ft. (max) extension cord (3 prong, grounded) *
1	Plastic container or cardboard box for transporting robot to and from game area
1	Ruler or tape measure
Unlimited Quantity	Pencils and notepad with blank paper for design and note-taking purposes

\*No two-prong extension or powers strip plugs allowed. Computer power cords are allowed to be two-pronged\*

7. No 3D printed pieces are allowed.
8. Teams may use any software that facilitates autonomous movement of the robot, so long as the robot is solely controlled by the programs stored on the HUB or microSD card.
9. No remote controllers of any type are allowed.
10. No computers or tablets may be brought up to the game tables during any matches. It can be during build time.
11. Note paper may only be used for note-taking purposes only. Teams may bring notes to the game table during matches. The paper is not allowed to be used for any other purpose (used on the robot for example).
12. Teams are not allowed to bring their own game mat and/or pieces.
13. **WiFi** is limited and only available to log into Chromebooks, Internet use/search is not permitted during the contest.
14. **Bluetooth Connectivity.** Bluetooth connections can be made and utilized during the programming phase. It is not allowed during the competition phase while the robot is on the playing field.

**15. Minimum Construction Skills and Proficiency.** Competitors must be capable of designing and building a functioning Lego Mindstorm robot that includes the use of:

- Motors
- Light/color sensor
- Touch sensor
- Ultrasonic sensor
- Levers, arms, claws, etc.
- Incorporating non-Lego parts into robot design and/or function

**16. Minimum Programming Skills and Proficiency.** Competitors must be capable of programming a Lego Mindstorm robot in order for the robot to:

- Move
- Turn
- Maneuver attachments effectively
- Use sensors appropriately and effectively

**17. Participants with Disabilities.** Any competitor who requires auxiliary aids or special accommodations must contact the Montgomery County Fair Office at least two weeks before the competition.

**18. Contest Schedule.**

Registration	8 a.m.
Orientation	9 a.m.
Coaches Meet w/ Team	9:20 a.m.
Programming & Practice	9:30 a.m.
Working Lunch	11:00 a.m.
Competition Starts	12:30 p.m.
Final Round	1:30 p.m.
Team Clean-up/Packing	2 p.m.
Results & Awards	2:30 p.m.

*\*Schedule is tentative and subject to change\**

*\*Lunch is to be provided by team or exhibitor\**

**19. Awards.** The awards will be as follows for each division (Senior, Intermediate, Junior):

1<sup>st</sup> Place: \$250.00, Team Trophy, Participant Ribbons

2<sup>nd</sup> Place: \$175.00, Team Trophy, Participant Ribbons

3<sup>rd</sup> Place: \$100.00, Team Trophy, Participant Ribbons

**20. Closed-Door Event.** This year's competition will be a closed-door event. Only the coach can accompany their team(s) into the competition area. Once the 10-minute coach team meeting has concluded, all coaches will exit the competition area. Upon completion of the final round, all coaches, parents, and/or guardians will be allowed to enter the competition area to attend the results & award show.

**21. Live Stream.** This year's competition will be live-streamed. A link to view the live stream will be provided on the morning of the competition.

# Rules of Play

***\*\*\*RULES OF PLAY MAY BE ADJUSTED BETWEEN THE INITIAL RELEASE AND CONTEST DATE BASED ON QUESTIONS AND CLARIFICATIONS RECEIVED PRIOR TO THE CONTEST.\*\*\****

1. This is considered a BLIND Contest; it will consist of eight (8) tasks; all tasks and Game Mat will be announced the day of contest.
2. Team will have 3 hours to build and during the “Programming & Practice” portion of the contest schedule. No prior building or coding is allowed, kits will be inspected the day of the contest.
3. The game mat will fit inside a standard robotics game table frame (inside dimensions = 45”x93”).
4. The PLAYING FIELD is the area outside of HOME.
5. The RESOURCE TRAY is a plastic tray that will be placed on the outside of the game table and will hold game pieces for the challenge. Game pieces in the RESOURCE TRAY may not be accessed until the match begins.
6. All parts of the robot, attachments, and game pieces must completely fit within the HOME each time the robot is launched from the HOME.
7. Home is 11” x 17” (length/Width)
8. Each match will be 3 minutes long.
9. Time begins when the announcer says “**BEGIN**” and continues until the announcer says, “**TIME**”. Robots must complete all challenges autonomously. At least one part of the robot must be touching inside the border of HOME before attempting a task. The robot must completely exit HOME completing the task.
10. Any structures built by the team or game pieces cannot be placed onto the PLAYING FEILD by human players but is permitted to be placed by the robot so long as it is done autonomously and is permitted by challenge rules.
11. No containers used by game officials to store game pieces can be used by the team/robot.
12. Players may retrieve their robot at any time during the match without penalty. When retrieved, the robot must return to HOME. Judges will not assist in any retrievals.
13. Possession is defined as a piece that is not touching the playing surface and is under the control of the robot.
14. Items in possession of a robot may be retrieved once any part/piece of the robot has broken the plane of HOME boundary.
15. If the robot is in possession of a game piece in the PLAYING FIELD, and the robot is retrieved by the player, the game official will return the game piece(s) to its original location/state.

16. A player is not allowed to touch any game piece except when the piece is completely inside the HOME boundary, OR if the robot is deemed in HOME AND in full possession of a game piece(s). Once the piece is deemed inside HOME, contestants may remove the game piece from the game table/robot and store it in the RESOURCE TRAY.
17. In the event of a major game piece mechanical malfunction, the judge may stop, reset, and restart the match. The table judge in coordination with contest Challenge Design Committee will make the determination on restarting the match.
18. If a contestant intentionally touches a game piece in the PLAYING FIELD, the team will be given a 50-point penalty per occurrence. Judges will issue one warning for the first offense. In such cases, the piece will be returned to its original starting position by contest officials as quickly as possible.
19. Teams that may experience equipment loss and/or malfunction(s) may NOT replace equipment with supplies from leaders, volunteers, parents, or AST/CEA.
20. Coaches will be permitted to meet with their team for a 10-minute time period prior to Build Time. This time should be used to help team members develop a plan and foster positive youth development.
21. No cell phones or other types of communication devices (smart watches included) are allowed in the contest areas. Exceptions include the approved items listed in the Participant Rules. During the Build Time and Robot Challenge, contestants are not allowed to communicate with anyone outside the contest. (including coaches and parents). Exceptions include medical emergencies. Contestants are welcome to ask questions to contest officials or other contestants.
22. Once a task has been completed it cannot be repeated in order to score additional points for that same task.
23. Teams will have two (2) preliminary Rounds in which to earn points. The sum score of the two matches will determine teams that qualify for finals. The top three (3) teams in each division will advance to the final match.
24. After the match, no one is allowed to touch the PLAYING FIELD until the Judge has recorded the condition of the field, the team has reviewed the scorecard, and it has been signed by the team Captain.
25. At the conclusion of the match, it is the responsibility of the team captain to review the score sheet with the judge, verify their score and then sign/initial at the bottom signifying agreement of the final match score. If a team member questions the team's score, he or she must discuss this with the judge prior to signing the score sheet and leaving the table. Scores are final after this point and cannot be contested. The contest tabulator will review the score sheet and will correct any mathematical inaccuracies.
26. Finals will consist of two additional matches. The two scores from the final round will be added to the preliminary scores. Finalist teams will be ranked based on their total scores. Judges' results are final.
27. All competing team members are allowed around the game table during competition, and any member may touch the robot when necessary.
28. Tie-breaker procedures/order will be as follows:
  - a. Highest total teamwork score
  - b. Highest total preliminary match scores (does not include teamwork)
  - c. Highest individual preliminary match score
  - d. Contest officials will determine additional measures if a tie persists.
29. Teams not competing must remain at their tables or staging area.

30. Good sportsmanship is always expected. This is crucial during practice times. Practice time on the game table may be restricted as build time progresses.
31. Teams must clean up their pit area prior to the awards ceremony.