

YOUTH ROBOTICS CHALLENGE

Natalie Cervantes – Superintendent

ENTRY DEADLINE – DECEMBER 15, 2022

ENTRY FEE - \$50 per project

SCHEDULE:

Registration	Sunday, March 19, 9:00 – 10:00 a.m.
Orientation.....	Sunday, March 19, 10:00 – 10:30 a.m.
Build Time (10-minute Coach Time)	Sunday, March 19, 10:30 a.m. – 12:00 p.m.
Robot Challenge Pre-Lims	Sunday, March 19, 12:00 p.m.
Robot Challenge Finals	Sunday, March 19, Following Challenge
Awards Ceremony.....	Sunday, March 19, Following Finals

CONTEST DESCRIPTION: This is a challenge-based robotics contest. Some known challenges will be released prior to the contest, and the remaining challenges will be revealed on contest day. Teams build and program their robot for known challenges prior to the contest. Teams will be given time to build and program the robot to account for the newly revealed challenges.

The known challenges will be posted at this link: <https://texas4-h.tamu.edu/projects/robotics/>.

SPECIAL RULES:

- 1. Eligibility:** Participation is open to Texas 4-H and FFA members, and Texas students currently enrolled in an accredited Texas school or homeschool (with proof of enrollment). Three (3) to six (6) students may constitute a team in this contest. Students are not allowed to compete on more than one team. Students will not be allowed to compete on both a 4-H and/or FFA team and a school team. All students must be from the same school, or club/chapter.

Junior Division: Participants must be at least eight (8) years old and in the third grade, but no more than eighth grade.

Senior Division: Participants must be in at least the ninth grade, but not older than nineteen (19) years old and in the twelfth grade.

- 2. Entry:** Application must be made through the online entry procedures located on the internet at www.RodeoAustin.com on or before December 15. An entry of \$50.00 per team will be charged for this event. Payment with entry authorization signatures must be submitted to: **Rodeo Austin Attn: Competitive Events, 9100 Decker Lake Rd., Austin, TX 78724**. Payment with entry authorization signature must be postmarked December 15, for all Robotics entries made payable to Rodeo Austin. Show Management reserves the right to reject entirely or accept conditionally any entry.
- 3. Passes:** Passes will be mailed to the coach prior to Show. Each team will receive one (1) parking pass and Show Grounds passes if entered online by the deadline.
- 4. Contest Format/Rules of Play:**
 - Teams must pre-build and program a robot prior to the competition.
 - Teams will report to the designated location for check in and submit their robot and additional pieces/equipment for inspection.
 - Each team will be directed to a team pit (one 6' or 8' table and chairs). Each pit will have access to electricity to power laptops and robot batteries.
 - An orientation will be provided for all participants where show management will review the challenge, rules and scoring.
 - The design of the game and designated number of challenges will be released in advance of the contest. There will be 3 to 4 additional unknown challenges revealed contest day, during orientation.
 - Each team will have 1.5 hours for additional designing, building, programming, and testing of their robot.
 - Teams will practice and compete on the same game table.
 - If time permits, teams are allowed to make alterations to their robot design and/or program between matches.
 - Teams must report immediately to the playing field when called.
 - The robot must perform challenges autonomously.
 - Only registered contestants and contest officials will be allowed in the pit Robot Challenge areas.
 - Teams that may experience any equipment malfunction(s) may not replace the equipment with supplies outside the contest area (from leaders, volunteers, county extension agents or contest officials). Instead, team members must work together and be creative in completing preparation without the malfunctioning equipment or visit with other teams to borrow the needed part.

- m. Depending on the challenges, contest officials may provide non-Lego items that can be incorporated into the design of the robot.
- n. 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.
- o. Coaches, teachers, and/or parents may NOT communicate, coach, or signal any teams/contestants once the Challenge has begun. Any team receiving additional coaching/communication outside of the designated 10-minute time period prior to Build Time will receive a warning and potential disqualification for continued infractions.
- p. No cell phones or other types of communication devices are allowed in the pit or contest areas. Exceptions include the approved items listed in the Participant Rules. During Build Time and Robot Challenge, contestants are not allowed to communicate with anyone outside of the contest (coaches, parents, siblings, etc).
- q. A match will range between 1 and 3 minutes in length, depending upon the challenges designed for competition. The specific time limit will be noted in the game release document.
- r. Teams will have two preliminary matches in which to earn points. The sum score of the two matches plus the teamwork score will determine teams that qualify for the finals. The top 5 teams in each age division will advance to the final match. If there are fewer than 5 teams in an age division, no finals will take place. The total score from the preliminary matches (match + teamwork scores) will be used for preliminary placings.
- s. Finals will consist of two additional matches. The two match scores from the final round will be added to the total preliminary score. Finalist teams will be ranked based on their total scores. Judges' results are final.
- t. Tie-breaker procedures will be announced during orientation.
- u. Teams must clean up their pit areas prior to the awards ceremony. Teams not making the top 5 are free to leave once their pit area has been cleaned and are dismissed by contest officials.
- 5. 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
- 6. Minimum Programming Skills and Proficiency:** Competitors must be capable of programming a Lego Mindstorm robot in order for the robot to:
- Move
 - Turn
 - Lift
 - Maneuver attachments effectively
 - Use sensors appropriately and effectively
- 7. Equipment:** Each team must supply their own equipment for the challenge. Each team may only bring the supplies listed in the table below. Any extra equipment or item that does not meet specifications will be returned to the team coach. No infrared beacons (remote) or sensors allowed.
- 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 Unlimited Quantity
 - Lego® Mindstorm® NXT, EV3, Spike Prime, or Inventor brick/hub..... 1
 - 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 sensor Unlimited Quantity
 - Lego® Mindstorm® NXT, EV3, Spike Prime, or Inventor light or color sensor Unlimited Quantity
 - Lego® Mindstorm® EV3 gyro sensor Unlimited Quantity
 - Laptop computer or tablet with programming software (Lego® or non-Lego® is acceptable) 1 or 2
 - Power strip (3-prong, grounded)* 1
 - 25 ft. (max) extension cord (3 prong, grounded)* 1
 - USB cable connection 1
 - Build Plans (paper or digital) Unlimited Quantity
 - Plastic container or cardboard box for transporting robot to and from game area 1
 - Ruler or tape measure 1
 - Pencils and notepad with blank paper for design and note-taking purposes..... Unlimited Quantity

** NO two-prong extension or power strip plugs allowed.

8. Scoring: Point values for each separate challenge may vary, depending on the level of challenge difficulty. Penalties will also depend upon challenge design, but examples may include: knocking over pieces, restricted human interaction with robot or game pieces, excessive retrievals, etc. Points will be awarded or deducted for each round of match play. Additionally, a teamwork score will be assessed by a panel of judges and added to the match scores to form the preliminary team score. The preliminary team score determines qualifiers for finals. After each match, the team captain will initial the score sheet, indicating agreement to the points awarded. Once signed, the match score is final and cannot be challenged. The contest tabulator will review the score sheet and will correct any mathematical inaccuracies.

9. Results: The contest results, as announced, will be final.

10. Awards:

Junior Division

Champion Team – \$1,000 Premium, Banner, Rosettes

Reserve Champion Team – \$500 Premium, Banner, Rosettes

3rd – 5th Place Teams – Rosettes

Senior Division

Champion Team – \$1,000 Premium, Banner, Rosettes

Reserve Champion Team – \$500 Premium, Banner, Rosettes

3rd – 5th Place Teams – Rosettes