

# ROBOLYMPICS



April 14, 2018  
9am - 2pm  
\$50 per team



age divisions

Junior: 3rd thru 5th grades

Intermediate: 6th thru 8th grades

Senior: 9th thru 12th grades

Overview: RobOlympics is a series of olympic themed events designed for competition with LEGO Mindstorm NXT or EV3 robots

100 meter dash

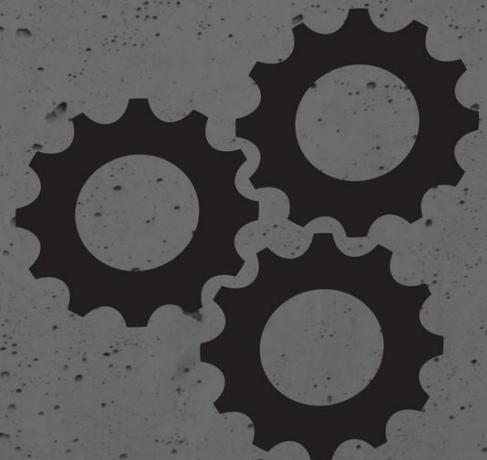
Alpine Skiing

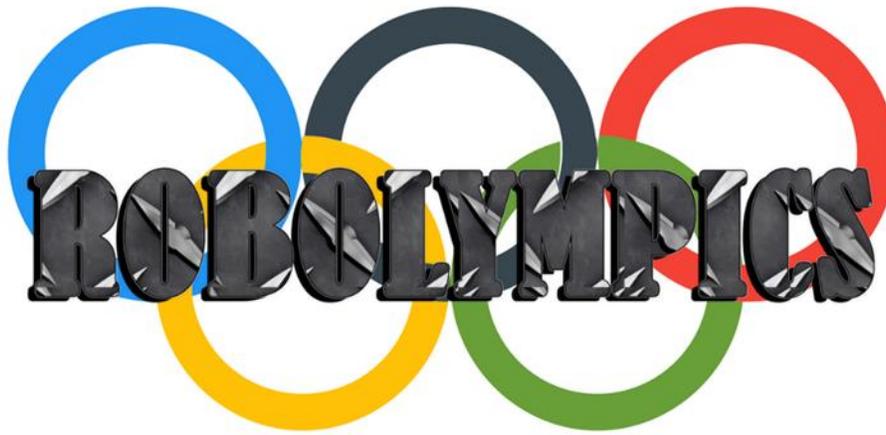
Discus Throw

Figure Skating

Brazoria County 4-H  
Robotics Project

21017 CR 171  
Angleton, TX 77515  
979.864.1558





## Competition Rules

### Location:

Texas A&M AgriLife Extension - Brazoria County Office  
21017 CR 171  
Angleton, TX 77515

8:30am Doors Open  
9:00 am Welcome & Orientation  
9:15 am Practice, Test & Program  
10:00 am First Olympic Challenge

### When:

April 14, 2018

The schedule will be fluid, once the first challenge is complete, approximately 45 minutes will be allowed to practice, test, and program for the next challenge. A break will be announced for lunch. A lunch will be provided for team members and available for purchase for spectators. Awards are tentatively scheduled for 2pm.

### Overview:

RobOlympics is a series of Olympic themed challenges designed for competition with LEGO Mindstorm NXT or EV3 robots. Points will be earned based on completion of Olympic challenge. The teams accumulating the most points across the four challenges in each age bracket will receive awards.

### Eligibility

Teams consist of 3-6 members. Teams can be from a public, private, or home school or from a county 4-H club. Teams may consist of members from more than one age bracket, however, the team must compete in the age bracket of the oldest team member. There will be 3 age brackets:

Juniors – grades 3 thru 5

Intermediates – grades 6 thru 8

Senior – grades 9 thru 12

## Entries

An entry fee of \$50 per team made payable to Brazoria County 4-H is required to participate in the RobOlympics along with a completed registration form. The first 5 paid and registered teams for each age bracket will be guaranteed a spot in the competition. All others will be placed on a waiting list. The teams' entry fee includes a sack lunch.

## Minimum Constructive Skills and Proficiency

Contestants must be capable of designing and building a functioning Lego® Mindstorm® robot that includes the use of motors, sensors, arms, claws. Incorporating non-Lego parts into robot design and/or function are not allowed.

## Minimum Programming Skills and Proficiency

Contestants must be capable of programming a Lego® Mindstorm® robot in order for the robot to: Move, Turn, Maneuver attachments effectively, and use sensors appropriately and effectively.

## 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 during registration. Any extra equipment or items that does not meet the following specifications will be returned to the team coach.

Unlimited Quantity	Lego® Mindstorm® NXT or EV3 building pieces (excludes brick, motors, and sensors)
Unlimited Quantity	Backup rechargeable batteries or sets of AA batteries
1	Lego® Mindstorm® EV3 or NXT brick
3	Lego® Mindstorm® EV3 or NXT motors
1	Lego® Mindstorm® EV3 or NXT ultrasonic sensor
1	Lego® Mindstorm® EV3 or NXT touch sensor
1	Lego® Mindstorm® EV3 or NXT sound sensor
1	Lego® Mindstorm® EV3 or NXT light or color sensor
1	Lego® Mindstorm® EV3 or NXT gyro sensor
1	Lego® Mindstorm® EV3 or NXT brick
1 or 2	Laptop computer or tablet with programming software (Lego or non-Lego is acceptable)
1	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.

## Scoring

Point values for each separate challenge may up to 50 points, depending on the level of difficulty. Penalties will also depend upon challenge design, but examples may include: knocking over pieces, restricted human interaction with robot, excessive retrievals of robot, etc.

## 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.

## Participants with Disabilities

Any competitor who requires auxiliary aids or special accommodations must contact Courtney 979.864.1555 at the Brazoria County Extension office at least two weeks before the competition.

## Rules of Play

The playing field will be available to test and practice on during the programming/practice time periods.

Teams will be allowed multiple attempts to complete the challenge as designated by the rules of play for each challenge.

Teams will be allowed to modify and program between the three attempts.

Scoring rubrics will be provided to teams when registration is received.

## Questions should be directed to

Courtney Latour 979.864.1558 or [clatour@ag.tamu.edu](mailto:clatour@ag.tamu.edu)

The Brazoria County 4-H Robotics project is in its second year. This is our first contest to host so please do not hesitate to let us know if further explanation is needed for the challenges.

*We look forward to seeing you!*

## **OLYMPIC CHALLENGES (Robot style)**

### **100 Meter Dash**

Robots will race one another for a distance of 30 feet. Each age bracket will race at the same time. To complete the race the entire robot must cross the finish line. This challenge will take place on a tile floor. Each age bracket will race three times, with a 5-minute modification period between runs. Each run the placings will be noted, the final score will be an average of the 3 placings.

### **Discus Throw**

Robots will throw a standard ping pong ball as far as possible. The throw will be repeated three times. The greatest distance will be used in scoring. Robots must throw from a stationary position. This challenge will take place on a tile floor. Each robot will compete one at a time, rotating through the age bracket.

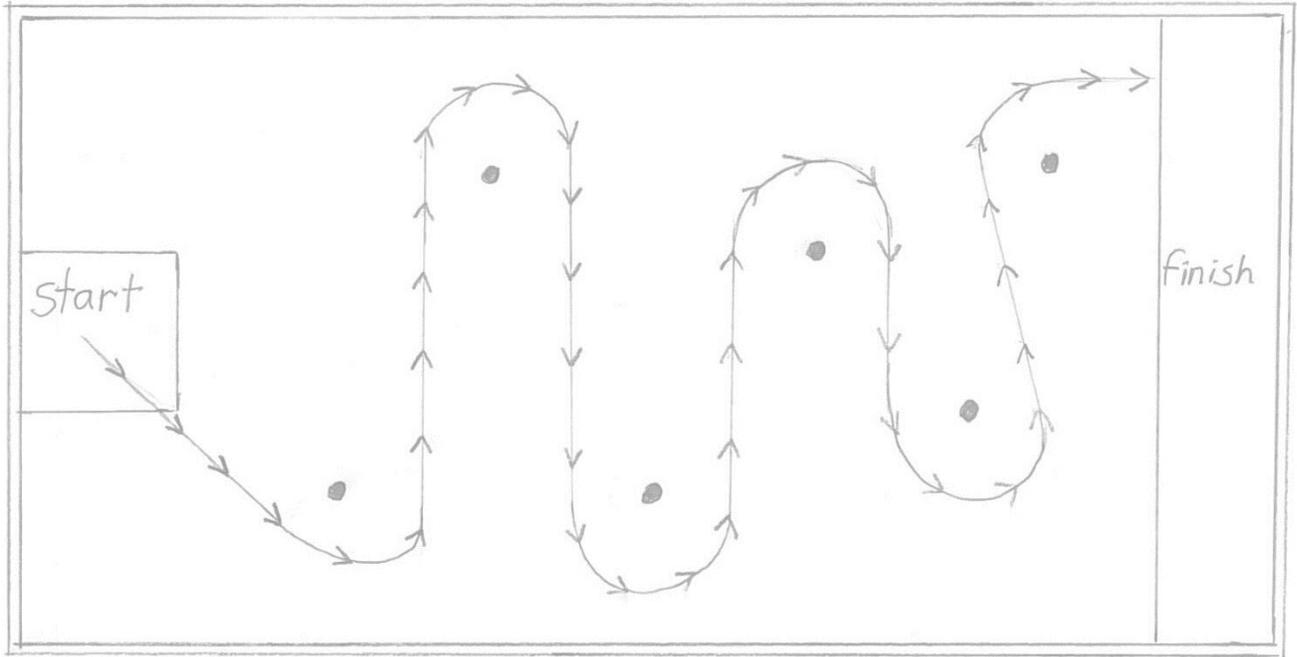
### **Figure Skating**

Robots will perform a series of maneuvers that include a complete loop around the perimeter of the rink, a diagonal revers across the rink, and a triple spin. The team can choreograph their own 90 second routine as long as it includes the three components. Creativity and originality will contribute to the score. The completion of the robot's routine should be signaled by a complete stop with raising of arm(s). The rink will be a standard field. The overall contest board is a 96"X48" piece of plywood with a standard 2"X4" (1.5"X3.5") boarder. Therefore, the actual size of the playing field is 93"X45".

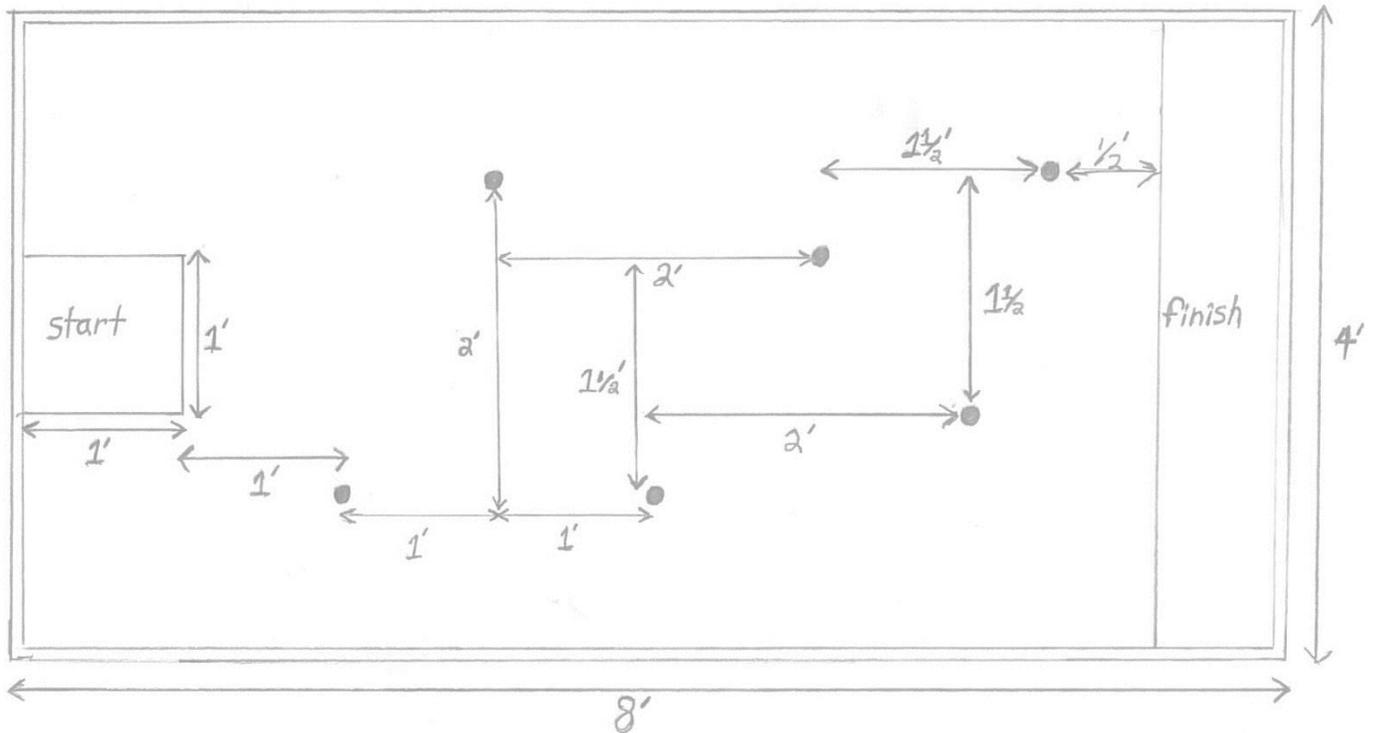
### **Alpine Skiing**

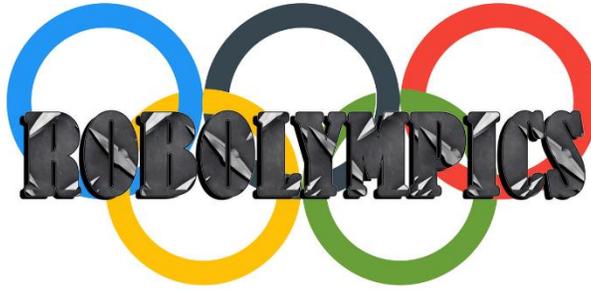
The robot will traverse 6 flags/cones. Points will be earned for following the pattern and deducted for knocking over flag(s). Robots will compete one at a time. Teams can modify/program in between runs, however they must be ready when it is their turn in the rotation. Each team will have 3 attempts to complete the pattern. The highest of the 3 scores will be the final score for this challenge. See schematics for pattern and dimensions.

Alpine Skiing Challenge Pattern:



Alpine Skiing Field Dimensions:





## REGISTRATION

The first 5 paid and registered teams in each age bracket are guaranteed a spot in the competition. Mail registration form with payment to

Brazoria County 4-H  
21017 CR 171  
Angleton, TX 77515

Team name: \_\_\_\_\_

School or Club: \_\_\_\_\_

Age Bracket: *circle one* Junior Intermediate Senior

Team members: *minimum 3, maximum 6, substitutions are allowed as long as they do not affect age bracket entered.*

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_

Coaches name: \_\_\_\_\_

Phone: \_\_\_\_\_ email: \_\_\_\_\_