

# Sumo-bot Competition Rules

**Location:** Guadalupe County Agricultural Extension Office, 210 Live Oak, Seguin, TX 78155 **Date and Time:** December 2, 2017 from 9-2 PM doors open at 9AM **Check in and Inspections:** 9-9:30 AM **Welcome:** 9:30 AM **Competition begins:** 10:00 AM **Awards:** 2PM

## OVERVIEW:

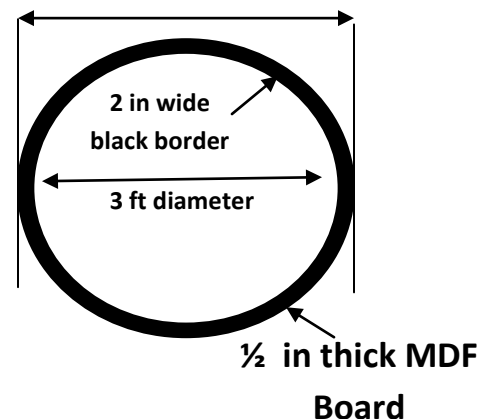
Sumo-bot wrestling is a contest where two programmed LEGO Mindstorm (NXT or EV3) robot contestants are given 2 minutes to try to push or flip each other out of a circular ring. The first robot to be removed from the ring or rendered immobile loses. The last robot remaining in the ring or mobile wins.

## THE SUMO RING INFORMATION:

Lego Robot Sumo wrestling takes place on a level circular ring approximately 3 feet in diameter with a 2 inch wide black border. The circular ring is made with 1/2 inch thick MDF and painted with flat white and black paint.



Total ring diameter 3 feet 4 inches



## HOW TO PLAY LEGO SUMO:

The entire competition will last for approximately 4 hours, depending on the number of teams competing. Each team competes in two, 2 minute round robin matches against every other team. For example, if there are 6 teams, each team will compete in at least ten (10) matches; more in the event of point tie-breakers.

The robots are placed facing each other on opposite sides of the ring with all of its tires just inside the white area of the ring. Sensors may be used to actively search for or sense your opponent, to detect the black line in order to stay inside the ring or both. You're allowed to use up to 2 sensors.

When both contestants are ready, the ring judge will signal the start of the two minute match at which time the robots must be activated (you must physically push the run button on your robot). No movement can occur before the official start (no posturing). Players must clear out of the ring area once the robots have been activated.

All participating sumo-bots must possess a form of mobility and use that mobility during play. Immobile sumo-bots will not be admitted, and sumo-bots that do not use their mobility during match play will be termed disabled (points earned for the opposing robot).

The robots will proceed in combat until one unit is disabled or removed from the ring. A robot is considered to be "removed" from the ring when any part of it falls off the edge and touches the surface on which the sumo-bot platform is placed. A robot whose body hangs over the edge is not considered 'off' until it physically tips off the edge and touches the floor. However, if the hanging robot is unable to return to the ring on its own before time is up, it will be considered disabled. Judgment of the ring officials is final. A robot that disables or removes the enemy gets a "Win" credited to it. If a robot removes or disables itself, the other robot gets a "Win" credited to it.

Your sumo-bot may not intentionally drop any LEGO piece(s) or any other object on the arena's surface. Anything that may be dropped on the arena, intentionally or unintentionally, will be immediately removed. **Note** that pieces that accidentally come off of the robot and land off of the arena **do constitute the robot leaving the arena**, and WIN points will be awarded to your opponent.

Should one robot become disabled (loses a tire, is flipped on its back or side, for instance) and is unable to actively compete, the ring officials will award the victory to the remaining robot. If it is determined by the judge that both robots are stuck in an entanglement or deadlock for at least ten (10) seconds, the judge will call for a **reset**.

If the judge-declares a **reset**, the clock is stopped and the robots are put back in starting positions. The robots will be reactivated and the clock restarted **with the remaining match time** (a **reset is not** a new 2 minute match). A match is over after two (2) minutes or after one “Win” occurs. If there is no victor after 2 minutes, see “How to get points”.

### **HOW TO GET POINTS:**

Points are earned as follows.....

- two (2) points for “win”
- one (1) point for “draw” or at the end of the two (2) minute round and no winner
- zero (0) for loss

At the end of the competition, the points will be totaled and the teams with the 4 highest scores will compete in a round robin final. In the event of a tie for the final 4 positions, the teams with tied scores will compete in a “sudden death” match to earn the final spot(s) in the finals.

The final 4 teams will start again with zero (0) points. New points earned from the final round robin matches will be tabulated and ribbons will be given for 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> place.

In the event of a tie for a ribbon place position, a final sudden death match will occur. Both robots will be reset to starting positions. The robots will be started for the final time. The first victory in **four (4)** minutes wins. In the case of two non-scoring robots, the scores from the entire tournament will be tabulated and the team with the highest overall score will be determined the winner.

### **ROBOT SPECIFICATIONS:**

The robot must be built entirely from LEGO pieces in original factory condition. The robot cannot be held together by any means other than standard LEGO construction methods (no stickers, tape, glue, etc.). Robots must be programmed to run autonomously and not receive any prompts or cues from the operator.

The onboard computing device must be RCX, NXT or EV3 programmable bricks. Remote controls, homebrew sensors, multiplexors and all other modifications to LEGO elements or their generic equivalent are prohibited.

Robots will not contain more than one (1) programmable brick, two (2) sensors, three (3) motors, and five (5) tires\*.

\*Tires of any size may be used, but **treads are prohibited**.

**Size and Weight:** Maximum Width: 10 inches, Maximum Length: 10 inches  
Maximum Height: No Limit, Maximum Weight: is not to exceed 1 kilogram (2.2 pounds)

Robots must fit into a square box of 10 inches to a side, with no height limitation. Parts of the robot (i.e. a motorized attachment) that are programmed to move may extend outside this region after a match has started.

Robots will be measured and weighed during check-in. You will be given the chance to modify your sumo-bot's weight and/or size if it exceeds the 1 kilogram (2.2 pound) weight limit and/or the width and length limits. Sumo-bots that fail to meet these specifications by the end of the check-in period will not be allowed entry.

**Attachments:** Although we want the competition to be fun and exciting, keep in mind that these robots are expensive. A robot **MAY** have attachments that push, grab or flip an opponent's robot. **However** a robot's attachments **may not** be constructed in any way that will overtly attempt to seriously damage the opponent's robot or damage the sumo ring, such as attachments that smash, hammer or shoot projectiles. Overt attempts to seriously damage the opponent's robot are **not allowed. Sumo is a game of pushing, not destruction.**

The officials and/or Judges will disqualify any robot whose strategy or operation is considered too dangerous.

#### **MORE NOTES TO CONSIDER:**

Robots must have enough power and stamina to compete for potentially 12 to 36 minutes throughout the tournament. Please consider battery accessibility and robot design.

During a match no changes in programming or construction of the robot are allowed. If a bot is partially dismantled during a match, teams are allowed to repair the robot with parts that were a part of the original design.

Electronic interference is prohibited. This includes, but is not limited to, flooding the arena with infrared rays, or broadcasting other electromagnetic interference.

A false start in a match (pushing the wrong button on your robot or beginning too soon) will result in a restart for the first fault. A second false start will result in forfeiting the round.

At the end of each round, the contestants are responsible for making sure the ring is clean and ready for the next round.

## **LUNCH and SNACK BAR:**

Please note there may not be a long enough break in the schedule for teams to leave the premises for lunch. Teams are welcome to bring packed lunches or make their own delivery arrangements.

A small snack bar selling items such as donuts, bottled water, sodas, popcorn, pickles, cookies, chips etc. will be available throughout the day.

\*\*\*There will also be a **limited quantity** of pepperoni and cheese pizza slices for sale (on a first come first serve basis) during lunch hours.

## **CONTACT INFORMATION:**

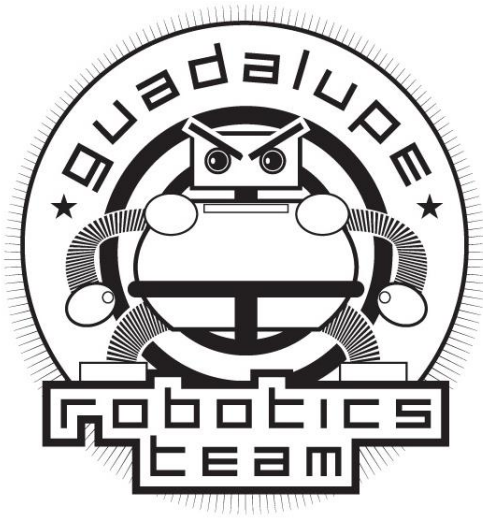
**Questions and inquires** can be sent to:

Club Manager Rose Faubush at [guadalupe4hrobots@gmail.com](mailto:guadalupe4hrobots@gmail.com)

Or mail questions to:

Guadalupe Robotics 4-H Club  
210 Live Oak  
Seguin, Texas 78155

**REGISTRATION FORM (on next page):**



# Sumo-bot Competition Registration Form

Registration Form (deadline November 17, 2017) - No Onsite Registration. **\*\*\*The first 6 paid and registered teams** for each division will guaranteed a spot in the competition; all others will be placed on a waiting list.

## Your Contact Information:

Contact Name: \_\_\_\_\_  
Contact Address: \_\_\_\_\_  
email: \_\_\_\_\_  
Contact Phone: \_\_\_\_\_  
County Club Name: \_\_\_\_\_

## Team Information:

Circle one 4-H division:    **Junior**    **Intermediate**    **Senior**

Team Name: \_\_\_\_\_

Team Members: (4 Maximum):

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

\* Teams will be categorized and compete based on the oldest member of the team. For example: A team consisting of 3 Juniors and one Intermediate will be placed in the Intermediate category.

**Checks for \$50 should be made out to: Guadalupe Robotics 4-H Club**

**Completed forms should be mailed or emailed to:**

**Guadalupe Robotics 4-H Club, 210 Live Oak, Seguin, TX 78155**

**Or [guadalupe4hrobots@gmail.com](mailto:guadalupe4hrobots@gmail.com)**

You should receive a conformation within a few days by email. Those on a waiting list will be notified as soon as a spot opens.