

# Robot ZONE [01]

The image shows two dinosaur robots in a sumo ring. The robot on the right is a Triceratops, and the one on the left is a Rhinoceros. They are both facing each other in a confrontational stance. The background is a warm, orange glow, suggesting a sunset or a dramatic arena setting. The text 'DINO SUMO' is overlaid in large white letters across the center of the image.

## DINO SUMO

Duel  
Challenge

Image by [Engin Akyurt](#)

## Context

Two dinosaurs compete to win the jewel. A feast where the winner gets all the food he or she wants, it's the reward for the strongest, most gifted, and most cunning.

Will you come out victorious?

## Robot Description

Robots must comply with the following constraints:

- **Maximum starting dimensions:** 30 cm X 30 cm X 30 cm
- **Maximum weight:** 1 kg (1000g)
- **Max motors:** 3
- **Max controller:** 1 (e.g. EV3 or Spike Prime)

The robot must be built so that **ONLY** the robot's wheels touch the ground. Wheels include tracks and bead wheel. The other parts of the robot, excluding the color sensors, must remain at least the equivalent of the thickness of a LEGO Technic beam from the ground and remain there.



Robots must be equipped with at least one light/color sensor.



## Warning:

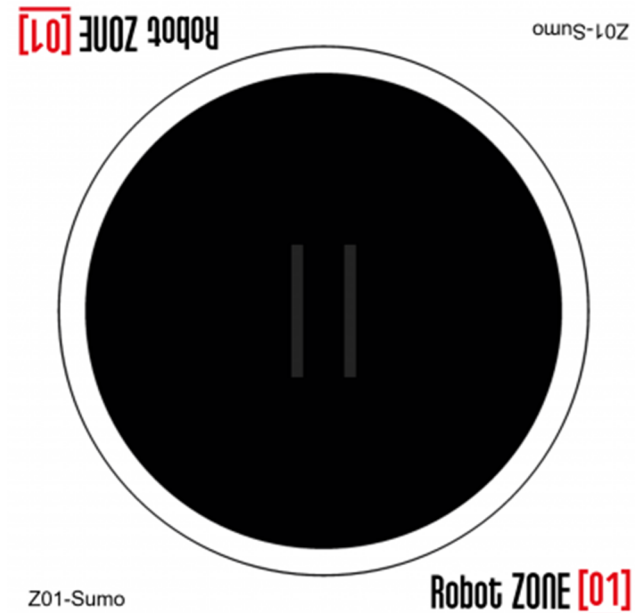
1. No LEGO part can be modified.
2. Robots must operate autonomously without remote control.
3. The following robot actions are NOT allowed:
  - a. Attempt to break the opponent.
  - b. Throwing projectiles
4. The following elements of a robot ARE allowed:
  - a. Defensive elements such as bumpers, inclined planes, etc.
  - b. LEGO-type elastics or model 3031507 elastics i.e., 64 mm x 1.5 mm for anything other than friction between wheels and ground
  - c. Offensive elements designed to knock down the opponent.

## Description of the Playing Field

### Used surface: Z01-SUMO Mat

The surface is a black circular playing area, 90 cm in diameter, bordered by a white strip 5 cm wide. In the center of the arena, 2 parallel gray lines are placed 10 cm apart.

The mat is available at [Zone01 shop](#).

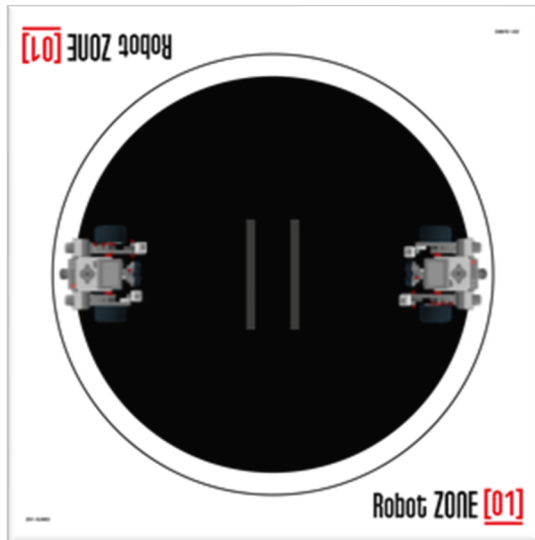




## Description of a Round

### Starting Position (new for 2023)

At the beginning of the round, each team's robots must be positioned facing each other, each on opposite sides of the mat, with the back of the robot over the white line. Robots should be aligned perpendicular to the gray center lines. It should be easy to identify the front of your robot, so add a distinctive sign.



### Pool System (new for 2023)

Teams will be separated into pools, each corresponding to a table.

Each team will meet each of the other teams in its pool for a single match and accumulate points.

After all pool matches have been completed, an average of points per match will be calculated for each team and a ranking will be created.

The finalists will be determined from the ranking and placed in a bracket. Within the bracket, teams will compete in a best of 3.



## Start of the Round

1. When two teams present themselves for the challenge, their robot must be inspected by a judge.
  - a. Robots are weighed, measured, and inspected to ensure that they comply with the regulations.
  - b. The judge checks that no part other than the wheels is within one beam of the floor.
2. Only two members of each team may approach the circle.
3. Both teams then position their robot in their starting area.
4. At the signal given by the judge, each team activates the program of its robot (see general rules for LEGO Spike Prime start-up procedure).
5. The robot must wait **5 seconds** before moving to give the students time to back up.
6. The robot then uses its own strategy to push the other robot out of the game area.

## False start

The judge may request, for any reason he considers valid, a new start. A false start is normally defined as:

1. Failure to respect the 5-second delay from the start.
2. Starting the program before the judge's signal.

## Victory

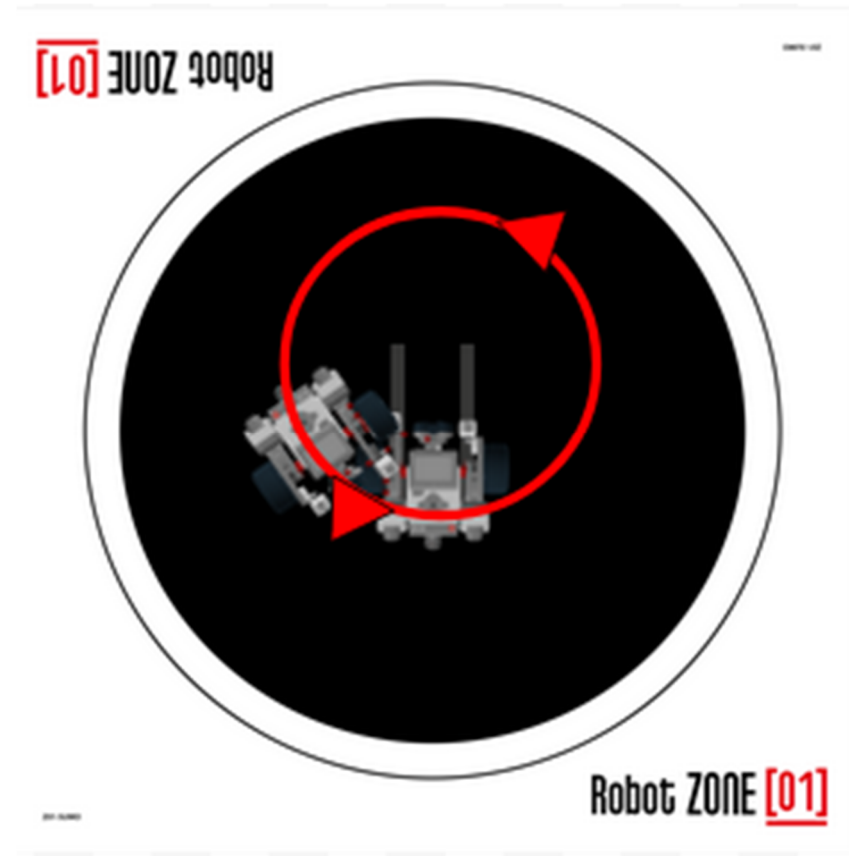
A victory is defined by:

1. The opponent's robot leaves the arena. The robot is considered to have left the arena when its driving wheels are outside the black zone.
2. The opponent's robot is knocked down and out of action.
3. The opponent's robot makes two "false starts" in a row.
4. A student from the opposing team touches one of the robots.

## Draw

A draw is defined by:

1. The robots are entangled or rotate around each other for more than 10 seconds without any noticeable change.
2. The robots seem to have come out at the same time, and it is not possible to know which one fell first.
3. The robots remain motionless for more than 10 seconds.



## Scoring Sheet per Match

	Points max
2 points for a win - Take out your opponent	2
1 point for a draw	1
<b>TOTAL</b>	<b>2</b>

## Necessary for This Challenge

- Color sensor
- Loop
- Concept of friction and mass
- Defense and attack mechanisms
- Distance or touch sensors (optional)

## Strategy Suggestions

- How important are mass and friction in this challenge?
- Do you have multiple programs or tactics?
- Do you use additional sensors or decoys?

## FAQ