



A Collaborative Robotics Program

## 2020 SUMO Challenge Rules

**Goal:** Design, build, and program an autonomous robot that can search for and push an opponent sumo robot off an elevated wrestling ring.

**Divisions/Mass Classes:** Please refer to the table below to decide which Division/Mass class you wish to compete in.

1Kg	3Kg	Lego Only 1Kg (Optional)
ES		ES
MS	**	MS
HS	HS	HS
**	UP	**

\*\* These categories could be added at the Event Directors discretion

**Robot:** Autonomous robot, any platform, costing \$1,500 USD or less, and meeting the following design constraints, which will be verified during Robot Check-In.

- Maximum size of robot is 25cm by 18cm with no height restriction as measured with any articulating components in their starting position.
- Size and mass restrictions are strictly enforced throughout the event to make the competition fair for all competitors.
- Articulating or moving components are allowed as long as they fit the above design rules however the no intentional harm rule applies- this means that flippers and skid plates are fine but deliberately destructive mechanisms such as abrasive spinners or hammers etc. are not allowed.
- For Lego Only Option: Any LEGO robot can be used but it must be fully made of LEGO branded parts, must be autonomous and must conform to the design specifications.

**Competition Ring:** 100cm diameter black circle with a 5cm white border on 13 to 20 mm thickness board. The surface of the ring should be elevated 50 to 80 mm from the ground. (measurements will vary slightly based on local materials being used)

**General Rules of Play and Scoring:**

- Each robot will compete in a series of round robin matches. The number of rounds/matches will be determined on the day of competition based upon the time permitted and the number of robots in each category.
- A match will be over once a team has won twice against their opponent. 3 points awarded for a win, 1 point for a draw and 0 points for a loss.
- Teams’ points will be tallied and displayed during the competition. The top 8 teams in each category will be selected for the finals matches.
- Teams can Practice on open tracks, taking turns with other teams needing to practice.
- Robots begin by touching the white line at opposite sides of the table from each other, positioned in any orientation. The robots must pause for 3 second after the start buttons are pressed to allow the team member to back away from the ring.
- The loser is the robot that leaves the ring first, which is defined as touching the surface upon which the competition ring is placed. The referee may call a draw after 60 seconds or force a restart after 5 seconds of “locked robots” at their discretion.
- Robot handlers must not touch their robots unless instructed by the referee. 5 minutes is allocated per match, if there is no winner in this time then it will be classed as a draw.
- Conflict Resolution - during game play, the referee’s decisions will be final.

**Tournament Scoring:**

- We typically host tournaments for the top 8 teams. However, should there be more than 8 teams due to ties, the event director can increase the tournament size to 12 or 16, or can hold a tie breaker tournament to get to 8, 12, or 16 teams to host a tournament.
- Advancing teams will be seeded into the tournament bracket according to their overall score. Below is example of our typical 8 team tournament bracket.



- Runners Up are used to determine 3<sup>rd</sup> & 4<sup>th</sup> places based on outcome of semi-finals.