



Cariboo Junior Skills Competition

Scope Document

Sumo Robots 2020

Thompson Rivers University
March 6, 2020



Eligibility:

This competition is open to teams of students in grades six through 10. Each team may be comprised of up to three (3) students.

The purpose of the challenge is to:

- Work as a team to design, build, and name a mini Sumo Robot.
- Create a wheeled device that can remove an opponent out of a given area (sumo ring).

Registration:

- There is a limit of 10 teams consisting of up to three (3) students
- Teams **MUST** belong to schools that are affiliated with Skills BC. Please contact Pat Barringer, Cariboo Regional Skills Coordinator, for details on affiliation.
- Registration will open in January 2020.

Note: Should space permit, additional teams will be entered on a “first come, first served” basis. If necessary, schools should initiate a school-based run-off to see which team will advance to the regional competition.

Equipment, Tools, and Materials:

Supplied by the Competitors:

- Safety glasses
- Robot and accessories
- Batteries
- Extension cord, power bar,
- Miscellaneous tools required to modify and repair robots on site

Supplied by the Committee:

- Scale
- Tape measure
- Sumo ring
- Power outlet
- Worktable will be available for repairs during the competitions.
- Competition schedule
- Panel of judges

Robot Limitations and Rules

- Each robot must be clearly labeled with a name clearly visible on at least two sides.
- Each robot will be measured and weighed when it arrives. The robot must fit within a cube measuring 13 cubic centimeters. (An additional control cable support with a maximum height off the playing surface of 20cm is allowed). The robot cannot exceed a maximum weight of 500g. (The control unit and 4 to 6-foot control cable are NOT considered to be part of the robot for size and weight measurements).
- The robot MAY NOT be modified after it has been measured and weighed. (The robot will be measured and weighed at the end of the competition).
- A Tamiya Twin-Motor Gearbox Kit **MUST** be used. (Additional gearboxes/motors may be used to move other parts).
- The maximum operating voltage is 6 Volts DC (4 – AA batteries)

Forbidden Items:

- Store-bought wheels or treads.
- Any device that may damage another robot
- Liquids, powders or compressed air
- Anything that may damage the playing surface
- Glue, tape or suction devices

Controller Limitations and Rules

- The housing of the controller **MUST** be made by the students
- The control switches **MUST** be made by the students
- The controller must house the battery pack.

Forbidden items

- Commercially fabricated housings or cases
- Purchased or salvaged switches or potentiometers

Match Play:

- The robots will place the robots randomly into a match play.
- A match will consist of 3 games.
- The winner of the match is the robot that wins two games.
- The winner of the match moves onto the “A” pool. The robot that loses the match moves onto the “B” pool.



- The winners of the A and B pools will then compete in a double knockout tournament-style competition.

GamePlay:

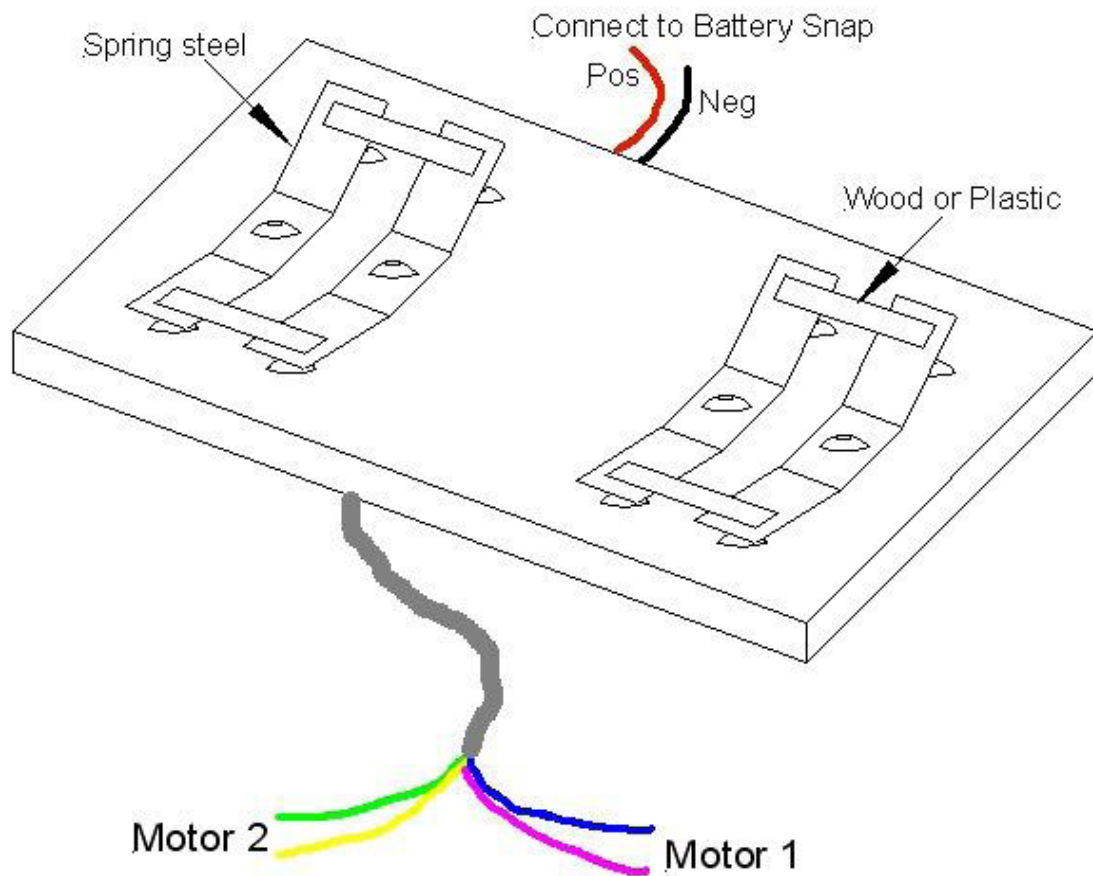
- A game will have a maximum time limit of 3 minutes.
- The first robot that has been removed from the playing surface is considered the loser of the game. In the event that both robots fall off the playing surface, the first to touch the ground is the loser.
- If the control cables become tangled, the judge has the decision to continue play or untangle and restart.
- If two robots are facing each other, and NO movement is made for 5 seconds, then both robots must stop power and the judge will restart the game and continue for the time remaining.
- If a robot loses power and cannot move, it forfeits the game.
- A 2-minute timeout will be granted between games to correct any repairs. After the 2 minutes, the robot will forfeit the match if the repair is unsuccessful.

Technical Committee:

Chair: Darren Seibel dseibel@sd73.bc.ca

Top of a typical Controller

Each switch will control a motor in forward and reverse



Underside of a typical Controller

