



**MCGILL  
BATTLEBOTS  
CLUB**

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# **COMPETITION RULEBOOK 2019**



# BATTLEBOTS

## PREAMBLE

Sumo wrestling is said to have been around for over 2000 years. Typical sumo wrestlers can weigh as much as 150kg (330lb), but thankfully we won't be building robots nearly as heavy. You could if you want, we're not going to stop you.

Sumo was chosen not only for its coolness, but its inherent simplicity. A deep understanding of mechanics is helpful, yes, but certainly not necessary to create a tournament-capable robot. This is not to say that brilliance and expertise are not rewarded; having the foresight and creativity to work around what your competitors throw your way is the path to victory. The robot needs to abide by the safety rules, be designed specifically for this competition and fall in one of the weight classes outlined. In this competition, teams will face off in five minute matches of 1vs1. The goal of the competition is to force the opposing robot out of the ring. The competition uses a bracket system where individual matches are played as a best of three, with the semi finals and final being a best of five. However, even if you get knocked out, you still have a chance at redemption through the losers' bracket.

## ELIGIBILITY AND REGISTRATION

For a team to be eligible to register for the competitions all members of the team must be McGill University students, Graduate or Undergraduate. The team leader must fill out the registration form when registration is made available after the second workshop. A refundable security deposit of \$20 is required to obtain the starterbot kit.

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## DATES AND DEADLINES

**BATTLEBOTS**

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### Information Session [January 20th 2020]

This is your introduction to the club, this is where you'll be able to get a better understanding of what we have in store this semester. You could also take this as an opportunity to find like minded people to begin forming your Sumo Teams and possibly friendships!

### First Workshop

This is the beginning of your learning process with MBC, we will start the workshops with a 5 hour session on January 25th 2020 where we will cover the following topics:

**Introduction to circuit analysis of C.**

**Basics of Inventor CAD software**

**Building the MBC BattleBot**

The safety workshop is the only mandatory session, however we highly advise that at least one member of each team attend each workshop. Moreover, workshops could serve as scouting grounds for you to form your teams.

### Second Workshop/Registration Begins

The second workshop will be held on the 22nd of February 2020 and will also be five hours length.

### Competitions

**Mid semester competition date: February 21st 2020 (tentative)**

**Final competition: March 21st (tentative)**

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## GENERAL SAFETY RULES **BATTLEBOTS**

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A comprehensive and **mandatory** workshop will be held covering the basics of safety that will give you guidance to understand and meet the safety standards required. Some basic safety rules that must be followed are to stay alert, wear the right clothes, use common sense, and be careful around electrical components. We also recommend that you read the section on weapons used in the competition thoroughly to avoid disqualification or harming yourself and others. Finally we highly recommend you attend all workshops so the construction of the BattleBot progresses safely and you gain all the knowledge to build your bots.

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## DESIGN RULES

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### Unique Construction

As part of the club ethos, competitors need to build their own robots designed uniquely for this competition. While we are not opposed to participants using components they previously own such as electric motors and circuit boards and bringing their expertise in a field, we do prevent teams from using bots that have been designed previously for other competitions in past semesters. In short, each participating team must have built a robot specifically for our competition which obeys the constraints of the particular class or the team will be disqualified. The use of the provided StarterBot design is accepted but we encourage participants to make small modifications and personalize the design.

### Weight Limitations

Currently, to enter in this competition, the participating robots must respect a maximum weight limit of 8 lbs. Robots above this weight limit will be automatically disqualified.



## WEAPONS

BATTLEBOTS

Allowed weapons must be risk free of injuries during installation and manufacturing of the BattleBot. Inspectors are allowed to refuse a BattleBot that does not obey these rules at any point of the competition. A comprehensive list of all possible devices that are a safety risk would be too long, however, the general approach is to not build a device that can harm you while constructing your robots, permanently destroy the opponents' robots, harm the other contestants, or damage the competition ring. The following is a list of items and techniques should help you understand what will result in disqualification from all MBC competitions.

- Flame emitters, or extremely flammable materials
- Sharp edges or vertices that are intentionally made in such a way that can pierce skin, such as knives, needles, or extremely sharp corners from metal fabrication
- Electrical discharge devices
- Chemical devices
- Water discharge devices
- Lasers or photon emitters
- Projectiles

A plethora of possible devices and techniques still remain, however. Some examples that we compiled are:

Mechanical mechanisms that can operate translational, rotational, and other possible degrees of freedom  
Torque mechanisms utilizing hammers, heavy loads, and other bludgeoning devices  
Your imagination

We are certain you're creative, and we are excited to see what you come up with! So don't shy away from developing interesting mechanisms, just make sure to discuss your idea with the VP Competitions to ensure it would not be a safety concern at any stage.



## TOURNAMENT STRUCTURE

**BATTLEBOTS**

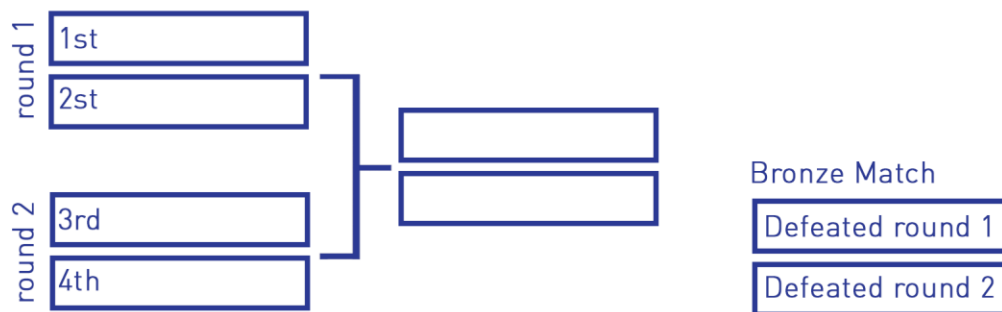
### Round Robin + Single Elimination

All teams play all other teams once in a round robin. After that, the four teams in descending order of most wins then face off in a traditional single elimination tournament. For example, if there were four teams, matches would happen in the following order:

A vs B  
C vs D  
A vs C  
B vs D  
A vs D  
B vs C

*(actual round robin matchups will be determined after the bracket is finalized)*

The four teams with the most wins would then be put into the bracket structure shown below:



The specific bracket design and layout will be determined after team registration is over.

Between each match there will be a minimum of five minutes; teams may use this time to make any repairs or adjustments, but they may not be late for their matches.



## MATCH RULES

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### Punctuality and Presence

Failure to show up at your registered time for a match during a tournament will result in an automatic disqualification.

Two teams with a BattleBot that respects the Competition Rulebook will be facing off each other for a duration of 120 seconds in a levelled circular arena.

### Initial Advantage

The competitor with the lightest BattleBot will choose its BattleBot starting position in the arena. In a given arena, there will be two to four starting positions to put the BattleBot on.

### Point System A:

- Time to win (s)
  - First 3 points
  - Second 2 points
  - Third 1 point
- Victory style
  - Immobilization (2 points)
    - The robot is no longer able to move either due to internal damage or complete physical domination by the other robot
  - Out of battle area (1 point)
    - The robot has fallen off the edge of the arena and has touched the floor.
- Victory Dance
  - 1 point
- Tie breaker
  - Lightest robot (1 point)

### Stalemate

Stalemate occurs when neither robot has been eliminated after the end of the round.

In which case, three judges will be voting on the performance of the BattleBots. This will be based on fighting style and initiative as well as esthetics and competitive spirit.

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# LIABILITY AND PERSONAL CONDUCT

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**BATTLEBOTS**

## 1. Personal Conduct

- 1.1 Members participating in competitions must behave in a respectful way towards the other competitors at all times.
- 1.2 Members must respect and accept the competition referee's decisions and calls on the outcome of a match, in the case of an unclear outcome of a match, a judge panel will decide on the ruling of match.
- 1.3 Any member that violates the terms of Liability and Personal Conduct will be asked to leave the event. Multiple or grave offenses will result in a ban and disqualification of that member's team.

## 2. Liability

- 2.1 McGill Battlebots Club (MBC) is not responsible for any harm done while building your BattleBot.
  - 2.2 Workshops will be given on how to build safely mechanical and electrical components, but MBC is not responsible for injuries done while building the BattleBot in and out of campus.
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