Manitoba Robot Games – 2020
General Rules

Effective Sept 11, 2019 Text in RED is new for 2020

Statements

MRG Goal

- **Manitoba Robot Games** (MRG) is a project of Science Council Manitoba.
- **Science Council Manitoba** is a volunteer organization dedicated to promoting Science and Technology to Manitoba's youth.

Fair Play

The MRG Committee believes that the competition should be decided upon the playing fields with a sense of fair play exhibited by all competitors.

- **As such,** the MRG Committee reserves the right to disqualify from the event: competitors, team members, coaches or educational institution teams who do not exhibit this sense of fair play in order to maintain this goal.

Judging

The Judges and Committee members are all volunteers and as such are not to be subjected to:

- **Verbal abuse** or threats:
  In the event of an incident, the matter may be reported to the appropriate authority.
- **Physical abuse**:
  In the event of an incident, the matter WILL be reported to the appropriate authority.

Rules

The MRG rules comprise of this document and rules specific to the individual competition.

Conduct

Competitors are representing themselves, their teams and in most case their educational institution. As such they are required to act with appropriate decorum with consideration to all facilities, equipment, opponents, coaches, judges, volunteers, staff and spectators at the event.

Violations include:

- **Uttering insulting** or offensive words, or putting voice devices in a robot to utter insulting or offensive words.
- **Making insulting** or offensive gestures.
- **Wearing of** inappropriate clothing at the event, such as T-Shirts with generally unacceptable messaging or images.
- **Decorating** of robot with generally unacceptable messaging or images.
- **Willful damage** to the facility or equipment.
- **Inappropriate** naming of robot.
- **Any other** conduct deemed inappropriate to the event.

Acknowledgment

It is the policy of the MRG Committee that competitors will acknowledge their opponents upon completion of a match prior to leaving the playing field area, regardless of the results. This acknowledgment may take the form of a handshake (if offered), encouraging comment, bow, nod of the head, high 5 or other generally accepted well meant gesture.

Dangerous Strategy or Operation

A robot using a design, strategy or operation that is deemed too dangerous may de disqualified. Contestants who are unsure if their strategies are suitable should contact a representative of the Manitoba Robot Games prior to commencement of the competition.

Prevention of Damage

Prevention of damage to playing fields and equipment is paramount. As such:

- **Should a** robot, in design, construction or due to subsequent modification, malfunction, wear and tear or damage, start to cause the above, it is the requirement of the competitor to cease operation.
- **Contestants** are to ensure the playing field is returned to its original state and is clean and ready for the next round to the satisfaction of the judges.
- **Failure** to do so may lead to disqualification of the contestant who produced the mess or who does not help in returning the playing field to the original state. This includes cleaning of all debris, fluids, or marks remaining on the playing field. Contestants or their teams are to supply the appropriate equipment to facilitate this cleaning.
- **All robots** in PSA, MSA and TP shall be fitted with a single action kill switch prominent on the top of the robot. For PSA and MSA the disconnect switch is to be coloured red, and will, when activated by pushing down and releasing, disconnect power to the motor(s), immobilizing the robot. For TPM the disconnect switch shall be activated by the removal of an article(be it pin or magnet, etc) which, being attached by a length of cord to the driver's wrist, when pulled, will cause a disconnect of power causing the vehicle to stop.

Radio Control

- **Radio controlled** robots must use authorized RC land-use frequencies.
  All radio-controlled robots should have incorporated into their design the provision for a change of frequency without the use of soldering equipment.

Robot Identification

- **The** MRG identification sticker(s) (as supplied while registering in the contest) must be placed on the robot so as to be easily readable on the robot's body while the robot is in competition

Hand Controllers and their Tethers

- **Tether** control wires are limited to a maximum of 8 conductors and no more than 24 gauge for the tether. As a result, the hand controllers will be limited to the amount of power that can be delivered to the robot. An acceptable alternative to overheated wires is to employ some form of motor controller onboard the robot so that the tether wires are only carrying low power signals to the motor controller. (See http://mbrobotgames.ca/mrgwp/wp-content/uploads/2015/09/XVCAT5ControlCircuit.pdf for an inexpensive solution)

Use of LITHIUM-ION(Li-Ion) AND LITHIUM POLYMER(Li-Po) BATTERIES

Conditions on using Lithium-Ion or Lithium Polymer Batteries

- **All Lithium** based batteries must be commercially available battery packs, unaltered, and identifiable to the judges (have the original label visible).
- **If using** Lithium based batteries, the robot is to be fitted with a removable fuse as close as possible to the battery connector. To calculate the minimum fuse size, use the following formula: (stall amps of largest motor) x (# of motors used) x (multiplier 1.5) = Minimum fuse rating. Choose the next largest fuse size. E.g. (2.2 stall amps)(2 motors)(1.5)= 2.2 * 2 * 1.5 = 6.6 Amps. As Mini® sizes automotive fuses come as 2, 3, 4, 5, 7.5, 10, 15, 20, 25, & 30 Amps therefore the next larger would be a 7.5 Amp fuse. Don't use the wrong wire size! As a guide, use 16 AWG wire up to 15 Amps, 14 AWG up to 25 Amps and 12 AWG up to 40 Amps. To calculate voltage drop go to: http://www.calculator.net/voltage-drop-calculator.html You will find more information about adding a fuse and shut off switch at http://www.mbrobotgames.ca/mrgwp/f-a-q/how-to-page/lithium
- **Only one** Lithium based battery pack can be used on the robot at a time, although replacement batteries/packs can be available if stored in a safe manner and were disclosed during the weigh-in.
- **Lithium based** battery packs are to be placed on or in the robot in such a way as to avoid direct contact by another robot, or against any chance of being punctured or shorted.
- **If possible**, remove the batteries to charge them. If this is not possible, the robot and battery shall be regarded as a single unit.
- **The charging** of all Lithium based batteries shall be performed in the charging area provided. A volunteer will be available to monitor for excessive heat, leakage or eruption of the batteries but will not be responsible for theft. If any charging battery is deemed to be in danger of eruption, the supervising volunteer will cover the battery with sand and remove it from the building, therefore we recommend the battery be removed from the robot for charging if possible, and that you supply a Li-Po safe charging bag (preferably with a handle).

Further Guidelines for using Lithium-Ion or Lithium Polymer Batteries

- **Never put** Li-Ion or Li-Po cells in series. If you need a higher voltage then purchase a "brick" or "Pack" of the desired voltage/Amp hr rating which is a series of cells that have been assembled in a factory and contain circuitry to ensure even charge and discharge.
- **Only use** a charger designed for the specific type and size of Li-Ion or Li-Po Battery.
- **Never leave** charging Li-Ion or Li-Po Batteries unattended.
- **Do not** overcharge lithium polymer batteries. (Please refer to your manual for overcharge limits).
- **Never charge** a Li-Ion or Li-Po battery at a faster rate than recommended.
- **If the battery** becomes hot to touch, switch off immediately.
- **Be extra** vigilant when carrying or connecting batteries to ensure that the battery leads are not allowed to be shorted.
- **Always store** Li-Ion or Li-Po batteries in a safe place, like a sturdy, non-conductive box.
- **Only charge** the batteries on a non-flammable non-conducting surface.
- **Do not charge** the battery inside or near flammable material.
- **An area** will be designated specifically for charging Li-Ion and Li-Po batteries as this will have sand and easy access to the outside in case of problems. Only NiCad and NiMH batteries will be allowed to be charged in the pit area
- **Never touch a swollen or smoking battery with your fingers**, (handle only with tongs or heat resistant gloves), disconnect and take outside immediately.

Methods of competition

At the discretion of the committee, competition method will be determined taking into account:

- Giving participants fair and equal opportunity to compete.
- Nature of the competition.
- Scheduling of the event.

Specific Methods

- Round robin
  - Each competitor plays every other competitor.
  - Typically with a double knock-out final.
- Double knock-out
  - Each competitor must lose twice to be eliminated.
- Single knock out
  - Each competitor is eliminated on their 1st loss.
- Self-competitive competition (such as Line Follower or Tractor Pull).
  - Overall winner determined by goals (time, weight, points) as detailed in rules specific to the competition.

Competition Ties

Ties within competitions, at any level, may be resolved through:

- Mini Round Robins.
- Single or Double knock-outs.
- Method as set out in the rules specific to the competition.
- In the event of ties between members of an Educational Institute, club or association a mutual agreement of tied status may be reached.

Access

Competition Area

Only the Competitor / Designated Driver (one member from each team) may be present in the competition area. Other Team Members, Coaches, friends and family, are limited to the stands and other public areas. Exceptions to this may be granted at the discretion of Judges, Officials or Committee Members.

Pit Area

Only Team Members, Coaches and Officials are allowed in the Pit Area.

Judges and Officials Area

Only Judges, Officials, Volunteers and Committee Members are allowed in this area. Competitors and Team Members are not allowed in this area. Exceptions to this may be granted at the discretion of Judges, Officials or Committee Members.

Rules that may be invoked for scheduling

To keep the event on schedule and progressing in an orderly fashion, the following may be invoked in whole or in part by the Head Judge in consultation with Committee members and event volunteers:

Time Outs

Judges will endeavour to allow competitors reasonable time outs to allow for simple repairs. For scheduling purposes, time outs may be denied and competitors are not "entitled" to having time outs but are expected to attend in a “competition ready” state.

Time Between Rounds

Judges will endeavour to allow competitors reasonable time between rounds. For scheduling purposes, this time may be limited to 30 seconds.

Match Start Delays

Contests WILL start within a reasonable amount of time once the match is announced.

In the event a robot fails to respond, the judge may grant no more than ONE, one minute delay. If after the one minute delay, the contestant still has not responded, they will lose the match.

Competitors are expected to be ready for competition and there is an "on-deck" area for the competitors to assemble in to facilitate this.

Competitors with more than one robot entered in the Robot Games must have an alternate driver who is ready and able to compete to facilitate this.

For this reason, the MRG Committee strongly suggests a robot not be entered into multiple competitions, which in most cases, will run at the same time. In the event that this happens, the competitor will be asked to withdraw from one of the competitions.

To facilitate scheduling the MRG Committee require that:

A competitor may enter unique robots into 2 or more competitions, but must provide sufficient alternate drivers for each robot to ensure no competition is held up because the driver is occupied elsewhere.

A competitor may enter only one robot in each competition.

At the discretion of the MRG Committee, competitors may be issued at registration a “time-out” tag that may be given to a competition judge. If the judge accepts the tag it will be marked with the time that the competition is expected to be back and ready to compete. If the competitor is not ready to compete by the time on the tag then the competitor will forfeit that round and be recorded with a loss.

Challenges and Resolutions

Challenges brought forth by a competitor can only reference rules specific to the individual competition. Rules as detailed in this document are not challengeable by competitors. They may be discussed with MRG officials or committee members by coaches.

Guidelines for challenges include:

- Immediacy
- Time out must be requested by competitor.
- If Judge agrees to hear the challenge - the time out is called.
- Should be prior to competitors leaving the competition area.

Who may object

- Either competitor in the match.
- Coaches of the competitors in the match.

Who may be present at the discussion?

- Competitors (challenger and opponent)
- Coaches (challenger and opponent)
- Match officials
- Interpreter if required
- Head judge if requested, and at the Head Judges discretion:
    - Any committee members.
    - Other volunteers and officials who witnessed the incident.
    - Any other person or people who the head judge wishes to consult with.

Others

- All others will be asked, once, to leave the area.
- If others fail to leave the area and are deemed connected with the challenger or their team in any way such as parent, sibling, friend, schoolmate, etc. the challenge will be dismissed.

Demeanour of discussion

- The discussion must remain cordial.
- In the event that discussion becomes heated, participants will be asked to maintain their calm. In the event that this does not happen, the Judge may terminate the discussion by making a ruling.

Escalation

Challenges may be escalated to the Head Judge if requested.

Resolution

- The Judge will make the ruling. If escalated, the Head Judge will make a final ruling on the challenge that is not open to further discussion.

Flexibility of Judgments and Rulings

Objections to Rules

Questions about qualifications or exceptions to the rules should be discussed and resolved before the event with the event organizers and as such are not eligible for discussion upon start of a competition.

Flexibility of Rules

As long as the general concept and fundamentals of the rules are observed, the rules shall be flexible enough to encompass changes in qualifications and of the contents of matches as initiated only by Judges, Volunteers and agreed upon by the MRG Committee.

Changes in Written Rules

Any changes to, or obsolescence of, these rules shall be decided by the MRG Committee at least 30 days prior to the games.

Challenges to Judgments or Rulings

Method is defined in the above.

Closing Statement

As stated, the goal of Manitoba Robot Games is to promote Science and Technology to Manitoba's youth, through an interesting and fun event. Let's all endeavour to keep sight of this goal while participating in the event.