# RoboWars

Team Specifications:

- Cross institute teams are allowed (School/College)
- A team of maximum 5 members can take part.
- Each team must register with a Team Name (please refrain from choosing obscene names) and a Team Representative, who would be contacted regarding any further details about the event.

Safety Letter :

Teams using pneumatics or hydraulics will have to send a safety letter signed by any faculty in-charge/Lab in-charge or a testing lab/company dealing in this field, on their official letterhead.

Bot specifications:

Dimension:

- The bot should not be sized more than the following dimensions: 750m x 750mm x 1000mm (lxbxh)
- The bot should not weigh more than 60 Kg

Robot Control Requirements:

a. The machine can be controlled through wireless or wired remote. Power supply should be on board only. For further details on battery and power, refer to the guidelines mentioned below.

b. For wireless bots:

- There should be a binding capability between transmitters and receivers. The remotes with only this facility will be allowed.
- The team must have at least four frequency wireless remote control circuits or two dual control circuits which may be interchanged before the start of the race to avoid frequency interference with other teams. The case of any interference in the wireless systems will not be considered for rematch or results.

c. For Wired Bots:

- All wires coming out of the robot should be bundled as a single unit.
- The wires should be properly protected and insulated.
- The wire should be sufficiently long so as to remain slack at all times during the competition.

d. Remote control systems from toys might be used. Remote control systems available in the market may also be used.

e. Nonstandard or self-made remote control systems must first be approved by the organizers.
f. Team should pair up the wireless remote with the machine before putting it into the arena.

Mobility:

All robots must have easy visibility and controlled mobility in order to compete.

Methods of mobility include:

1. Rolling (wheels, tracks or the whole robot).
2. Non-wheeled robots having no rolling elements in contact with the floor and no continuous rolling or cam operated motion in contact with the floor, either directly or via a linkage. Motion is "continuous" if continuous operation of the drive motor(s) produces continuous motion of the robot. Linear-actuated legs and novel non-wheeled drive systems come under this category.
3. Jumping and hopping are not allowed.
4. Flying (using airfoil, helium balloons, ornithopters, etc.) is not allowed.

Battery and Power:

1. The machine can be powered only electrically. Use of an IC engine in any form is not allowed. On board batteries must be sealed and immobilized-electrolyte types (such as gel cells, lithium, NiCad, NiMH, or dry cells).
2. The electric voltage between 2 points anywhere in the machine should not be more than 36V DC at any point of time.
3. All efforts must be made to protect battery terminals from a direct short and causing a battery fire. Failure to do so will cause direct disqualification.
4. Use of damaged, non-leak proof batteries may lead to disqualification.
5. Special care should be taken to protect the on-board batteries. If the battery is found improperly protected by the judges, then the team will be immediately disqualified.
6. Change of battery will not be allowed during the match.
7. Only bots with onboard batteries are allowed.
8. It is suggested to have extra battery ready and charged up during the competition so that on advancing to the next level, you don't have to suffer due to an uncharged battery. If teams don't show up on allotted slot, they will be disqualified.

Pneumatics:

1. Robot can use pressurized non-inflammable gases to actuate pneumatic devices. Maximum allowed outlet nozzle pressure is 10 bar. The storage tank and pressure regulators used by teams need to be certified and teams using pneumatics are required to produce the Safety and Security letters at the Registration Desk at the venue. Failure to do so will lead to direct disqualification.
2. Participants must be able to indicate the used pressure with integrated or temporarily fitted pressure gauge. Also there should be a provision to check the cylinder pressure on the bot.
3. The maximum pressure in cylinder should not exceed the rated pressure at any point of time.
4. You must have a safe way of refilling the system and determining the on board pressure.Liquid projectiles.Any kind of inflammable liquid.
5. All pneumatic components on board of a robot must be securely mounted. Care must be taken while mounting the pressure vessel and armor to ensure that if ruptured it will not escape the robot. The terms 'pressure vessel, bottle, and source tank' are used interchangeably.
6. Entire pneumatic setup should be on-board, no external input (from outside the arena) can be given to the robot for functioning of its pneumatic system.

Hydraulics:

1. Robot can use non-inflammable liquid to actuate hydraulic devices e.g. cylinders.
2. All hydraulic components on-board must be securely mounted. Special care must be taken while mounting pump, accumulator and armor to ensure that the ruptured direct fluid streams do not escape the robot.
3. All hydraulic liquids are required to be non-corrosive and your device should be leak proof. Maximum allowed pressure is 10 bars.
4. Participant must be able to indicate the used pressure with integrated or temporarily fitted pressure gauge.
5. Entire hydraulic setup should be onboard, no external input (from outside the arena) can be given to the robot for functioning of its hydraulic system.

Weapons Systems

Robots can have any kind of magnetic weapons, cutters, flippers, saws, lifting devices, spinning hammers etc. as weapons with following exceptions and limitations:

1. Liquid projectiles.
2. Any kind of inflammable liquid.
3. Flame-based weapons.
4. Any kind of explosive or intentionally ignited solid or potentially ignitable solid.
5. Nets, tape, glue, or any other entanglement device.
6. High power magnets or electromagnets.
7. Radio jamming, tasers tesla coils, or any other high-voltage device.
8. Tethered or untethered projectiles.
9. Spinning weapons which do not come in contact with the arena at any point of time are allowed. In no case should the arena be damaged by any bot. The competition will be played on a knock-out basis.

Scoring:

1. A robot is declared victorious if its opponent is immobilized.
2. A robot will be declared immobile if it cannot display linear motion of at least one inch in a timed period of 30 seconds. A bot with one side of its drive train disabled will not be counted out if it can demonstrate some degree of controlled movement. In case both the robots remain mobile after the end of the round then the winner will be decided subjectively.
3. A robot that is deemed unsafe by the judges after the match has begun will be disqualified and therefore, declared the loser. The match will be immediately halted and the opponent will be awarded a win.
4. If a robot is thrown out of the arena the match will stop immediately, and the robot still inside the arena will automatically be declared as the winner.
5. Robots cannot win by pinning or lifting their opponents. Organizers will allow pinning or lifting for a maximum of 20 seconds per pin/lift following which the attacker robot will be instructed to release the opponent. If, after being instructed to do so, the attacker is able to release but does not, the competitor will be given a first warning. Any repeat of this offense will lead to disqualification may be disqualified. If two or more robots become entangled or a crushing or gripping weapon is employed and becomes trapped within another robot, then the competitors should aware the timekeeper, the fight should be stopped and the robots separated by the safest means.
6. Decision of the judges and Organising Committee will be final and binding.
7. The prizes are subject to change on the basis of quality of participation.

Video and Abstract Submission
Participants are required to submit a written abstract and a video showing the working of the bot during registration. Last Date for submission is:?

Abstract:

The abstract should include the functioning of the bot, various features of the bot and a block diagram should also be attached.

Each component of the bot should be explained in detail so as to judge whether the bot is within the bounds of the competition.

Also the various frequencies at which the bot will be functioning should be mentioned.

The abstract can be submitted before the video.

Video:

1. The video should be of at least 1 minute with the unedited clip showing the machine
performance to the fullest. All destructive mechanism(s) being used must be shown working.

2. The details of the bot need not be explained in the video. The video will only be used to judge the competitiveness of the bot and seeding purposes.

Arena:

Each Robot will battle out with its opponent in a 400x400 cm arena.

No obstacles will be present.

Safety Guidelines:

> Compliance with all event rules is mandatory. The competitors are expected to follow the rules and procedures of their own accord and not require constant policing.

1. Special care should be taken to protect the on-board batteries and pneumatics, robot without proper protection will not be allowed to compete.
2. If you have a robot or weapon design that does not fit within the categories set forth in these rules or is in some way ambiguous or borderline, please contact the event organizers. Safe innovation is always encouraged, but surprising the organizers with your brilliant exploitation of a loophole may cause your robot to be disqualified even before it competes.
3. Each event has safety inspections. It is at their sole discretion that your robot is allowed to compete. As a builder you are obligated to disclose all operating principles and potential dangers to the inspection staff.
4. Proper activation and deactivation of robots are critical. Robots must only be activated in the arena, testing areas, or with expressed consent of the event coordinators.
5. All weapons must have a safety cover on any sharp edges.
6. All participants build and operate robots at their own risk. Combat robotics is inherently dangerous. There is no amount of regulation that can encompass all the dangers involved.
Please take care to not hurt yourself or others when building, testing or competing. Any kind of activity (repairing, battery handling, pneumatics systems etc.) which may cause damage to the surroundings during the stay of the teams in the competition area should not be carried out without the consent of organizers. Not following this rule may result in disqualification.
7. All the resources provided at the time of competition from the organizers should be strictly used only after the consent of the organizers.
8. Once the robots have entered into the arena, no team member can enter into the arena at any point of time. Only the organizers can halt a fight in between or make changes to the arena or to the conditions of a robot(s).