RULE BOOK

Robowars

Task

Design and build a combat robot to battle other robots in a high-energy tournament, testing your machine's strength, strategy, and resilience. Ensure your creation adheres to all specified rules and safety guidelines for a fair and thrilling competition.

A. Basic Specifications:

This section outlines the basic specifications for the bot dimensions, weight categories, and arena setup to ensure a controlled competition

Dimensions of Bot

Each robot or cluster group of robots shall start the fight fully contained within a 30cm x 30cm square. The maximum dimensions of the robot or cluster robots are the following

Length is 25cm

Width is 25cm

Height is 25cm

Weight

- All the batteries and weapons should be on board. The remote control is not included in the weight.
- There are one weight categories:
  1. 1.5kg (1% tolerance)

Arena

1. The arena would be a square of side length 8 feet.

2. The arena will be made of bullet proof polycarbonate and will be completely closed off during matches.

B. Mobility:

A robot can be on wheels, fly, walk, crawl, jump, and so on, if it can move in a controlled manner on the arena. The minimum speed of the robot should be 5 km/h, but it is preferable to be much faster.

- Rolling (wheels, tracks or the whole robot).
- 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.

- Jumping and Hopping

3. Methods of mobility that are not included

- Flying (using air-foils, helium balloons, ornithopters, etc.) of any form is not allowed.
- Securing on the arena using suction cups, diaphragms, sticky treads, glue or other such items.

C. Control Requirements:

This section outlines control requirements, focusing on wireless operation for bot operations.

1. Wired bots are not allowed.

2. Wireless

- The team must have at least a 4-frequency wireless remote control circuit or two dual control circuits that can be interchanged at the start of the competition to avoid frequency interference with the other teams.
- There must be binding capability between transmitters and receivers, and they must be able to connect between polycarbonate, metal bars and barriers.
- Remote control systems from the market may also be used, while non-standard or self-made systems can be used only after the approval from the organizers.
- The team should pair up the wireless remote with the machine before putting it in the arena. No extra time is given for pairing once the machine is inside.
- Although autonomous functions are permitted within the bot, the controller must have the capability to remotely disable or override these functions at any time. Additionally, the team is fully responsible for any damage resulting from such functions. A manual emergency stop (E-stop) feature is mandatory and must be operable via the radio controller to immediately disable the autonomous functions in case of emergencies. The declaration of an emergency shall be made by the judge.
- In case of any emergency every bot should have either kill switch or u-link to cut off the power supply to the bot within 20 sec.

D. Battery and Power:

This section defines power requirements for the bots, allowing only electrically powered systems with on-board batteries.

1. The machine can be controlled electrically only. The use of IC engines in any form is not allowed.

2. Only bots with on-board batteries are permitted. It's advisable to have an extra battery charged and ready during the competition to avoid any inconvenience or delay due to an uncharged battery when advancing to the next level.

3. The batteries must be electrolytes such as gel cells, lithium, NiMH, NiCad or dry cells should be adequately protected within the body shell and securely fixed to minimize the chance of getting punctured or coming loose in combat. In addition, packing such as high-density foam is recommended to reduce shock impacts. Battery terminals must be protected to prevent short circuits.

4. The electric voltage between 2 points anywhere in the machine should not be more than 36V DC at any point of time.

5. The batteries must be sealed, immobilized or dry cells.

6. Change of battery will not be allowed during the match.

7. The supply from the battery to all the weapons and power systems should have a manual emergency stop that can be triggered through the radio controller

E. Weapon Systems:

Weapons that are not allowed

- Weapons that cause invisible damage to the opponent (due to electricity, radio frequency, radio frequency noise, electromagnetic fields).
- Liquid projectiles (foam, liquefied gasses).
- Any kinds of inflammable materials.
- Entanglement materials such as nets, fishing lines, cable, tape, or any other similar device.
- Smoke and light-based weapons which impair the viewing of robots by entrant or judge or viewer (smoke or dust, lights such as external laser and bright strobe lights).
- Hazardous materials (hazardous to humans)
- Any form of explosives.

J. Safety Rules:

This section emphasizes safety protocols, requiring all teams to follow guidelines and obtain event approval before competition. These rules ensure a secure environment, protecting participants and organizers during the competition.

All participants must follow event rules and comply without the need for constant supervision.

1. Robots lacking protection for batteries will not be allowed to compete.
2. If your design includes elements not addressed in the rulebook, we kindly advise reaching out to the Robowars coordinators. Engaging in any unintended loophole exploitation could result in your bot being disqualified prior to competition.

3. Robots will undergo safety inspections, and teams can compete only with the approval of event authorities. All potential hazards must be disclosed.

4. Robots must be activated only in designated areas with coordinator approval, and weapons must have safety covers on sharp edges.

5. Combat robotics involves inherent risks, so we encourage all participants to prioritize safety and take necessary precautions to protect themselves and others throughout every stage of the event.

6. Any repairs or hazardous activities which may damage the surroundings or cause harm to others require organizer approval. Violations may result in disqualification.

7. Once robots enter the arena, no team members are allowed inside. Any necessary adjustments will be handled by the organizers.

8. In case of any emergency every bot should have either kill switch or u-link to cut off the power supply to the bot within 20 sec.

G. Rounds:

1. The robots will be placed in the corner before the match begins.

2. The fixtures will be drawn by judges in the presence of the organising team to ensure a fair process.

3. Robots will be promoted based on their performance.

4. There will be at least 45 minutes break between two consecutive matches of any team, where teams can repair their bots. Ensure your bot is ready to fight by the end of this time period as no extensions will be provided.

H. Scoring

In the judging of the Championship, judges are involved. The judges have all the authority of the Organisers throughout the competition, and all participants shall comply with their decisions.

Judging criterion is based on three major factors

1. Damage(0-5 points)

a. Minimal damage does not reduce the functionality and efficiency of the robot.

b. Moderate damage reduces the efficiency of the drive, protection, or armor of the robot.

c. Significant damage destroys the functionality of the drive system, weapon, or armor of the robot. Reduces the effectiveness of two or more systems.

d. Massive damage destroys the functionality of two or more systems of the robot.

2. Aggression (0-3 points)

a. Frequency: The number of attempted attacks throughout the entire match. If the opponent robot tries to evade the attack, it still counts as an attempted attack.

b. Severity: The intensity or strength of each attack.

c. Boldness: Whether the robot attacks the opponent with a risk to itself.

3. Control(0-3 points)

Controlling is judged in terms of the ability to attack the opponent's weakest points using the robot's weapon in the most effective way while minimising self-inflicted damage.

a. How well the robot can choose when and how to attack the opponent.

b. How well the robot avoids getting hit by the opponent's weapon.

c. How well the pilot compensates for robot damage.

I. Rules and Regulations:

This section covers gameplay rules, team setup, and conditions for winning and disqualification ensuring fair play and safety throughout the competition.

Game Play

1. Participants can participate in a team of up to 5 members.

2. Only registered members from the same team should be handling the bot at any time.

3. Setup time– 60 seconds.

4. Dimensions and weight of the bot will be measured. The team should report on time or the team will be disqualified.

5. Match duration– 3 minutes.

6. Each team is permitted to have multiple bots in each category and the teams should play a fair match even if the bot A and bot B are from the same team fighting the same match

7. The teams are expected to play a fair match and fairness of the match is decided by the judges , if the judges feel that the match was unfair then the resulting team would be disqualified.

8. A team cannot use the same bot with different names by just modifying certain components of the bots.

9. Marks will be awarded by the robofest team and judges. Any argument and misbehaviour with the organizers will not be entertained.

10.In case of any disputes, the decision made by the robofest team and judges will be final.

Note :

Depending upon the number of participants the elimination methods will be decided by the organising team in the presence of judges.

Ways to get disqualified.

1. Switch your robot on when there is a person inside the arena.

2. Intentionally damaging the arena.

3. Failing to report 1 minute (setup time) before your battle starts.

4. Quarrels and arguments with judges for scoring.

5. A robot deemed unsafe by judges.

Victory

- Immobilizing opponent robot.
- Scoring more points at the end of the match.
- If the opponent bot is disqualified