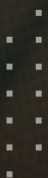




SOCIETY OF MECHANICAL ENGINEERS

# Robo-War Rule Book

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## **1. Event description:**

It will be a savage, Clash of Metals with the alloys grinding red hot. It is a game of style, control, damage and aggression with the robot pits against each other in a deadly combat.

It is time to concentrate on the slashing of the bots. Get ready to feel the chills and shivers down your spine and become a part of Rob wars.

So Design and Construct a remote controlled bot with adequate weapon systems capable of fighting a one on one tournament.

## **2. General rules:**

### **1. Team Specifications**

Any team can participate in Robowars, TechNITi'23. A team can have a maximum of 8 participants. These participants can be from the same or different institutes.

### **2. Team Representative:**

Each team must specify their team representative (leader). All the important communications between the organizing committee and the registered teams will be done through their team representative. All participants must submit valid contact details at the time of registration.

### **3. Team Name:**

Every team must have a unique name. The organizing committee has a right to reject entries from any team whose name it deems inappropriate, offensive or conflicting. Team representatives will be notified if a team's name has been changed.





### **3. Game Play**

- Match duration and type:

Matches will consist of 2 or 3 minutes of active fight inclusive of 30 second time-outs (Taken once per match, no extension of time apart from the timeout). Hence, it is not binding but advisable to keep battery capacity, power usage and machine defences such that they can sustain a 3- minute fight.

- The matches will be of the following types:

1. Technical Inspection
2. One on one Knockout
3. Demolition Derby

#### **Match Frequency**

- A team is allowed to prepare for the next match for 30 minutes. If the team fails to return with the robot ready to the pre-match staging area when called after the allotted time, the team may be forced to forfeit. (Any routine maintenance i.e. charging the battery should be done within this period. The 30-minute time period may be lengthened at the discretion of the judges in extreme cases)

#### **Criteria for Victory**

- A robot is declared victorious if its opponent is immobilized.
- A robot will be declared immobile if it cannot display the linear motion of at least one inch in 10 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, the winner will be decided subjectively.





- Robots cannot win by pinning or lifting their opponents. Organizers will allow pinning or lifting for a maximum of 20 seconds per pin/lift then the attacker robot will be instructed to release the opponent. The attacker should immediately release the opponent if asked, and failure to do so may lead to disqualification.
- If the two bots, during a one-on-one fight, become entangled by any action, the competitors should make the timekeeper aware. The fight should be stopped and the bots should be separated by the safest means.
- If the bot gets immobilized due to getting stuck in an awkward position, (Please note that the battle arena will be caged and there will be no obstruction on the sweeping area enclosed by the cages) The fight will continue till the end and the bot having more points will proceed to the next round. The deciding parameter in this case is the number of points, it doesn't matter if the bot having a higher point is immobilized. As long as it is having more points at the end of the round, it will be declared as the winner.

#### **4. Details of Individual Rounds:**

Round 1:

##### **TECHNICAL INSPECTION (T.I.) :-**

In this round, the bot made by the participants will be subjected to a thorough technical inspection.

This isn't a judging parameter; hence no points are awarded for this round. Bots not meeting the displayed specifications will be disqualified immediately and the participating team wouldn't proceed to next round(s).





### Dimensions & Fabrication of Robot:-

- Maximum size of the bot = 75 x 75 x 100 cm (l x b x h)
- Maximum Weight of the bot = 60 kg (excluding battery) if wireless bot is there then including battery (Allowed weight inside arena is 60 kg).
- Robots can have any kind of magnetic weapons, cutters, flippers, saws, lifting devices, spinning hammers, hydraulic or pneumatic weapons etc. **(Inflammable liquids/Flame Based Weapons are not allowed).**
- Maximum DC voltage supply = 36 V.
- At least one attacking weapon should be there; totally defensive bots are given less marks in innovation criteria.
- Bots should be self-fabricated including the weapon systems. Readymade bots or weapon systems will lead to disqualification. Jumping/hopping/flying bots are not allowed.
- Wired or Wireless bots can be used. In case of wireless bots frequency should be changeable, prefer atleast 4 changeable frequencies.
- Flying (airfoil using, helium balloons, ornithopters, etc.) is not allowed
- Any flywheel or similar kinetic energy storing device must not be spinning or storing energy in any way unless inside the arena or testing area.
- Readymade Electronic Circuits of Toys can be used.
- Use of non leak proof or damaged batteries will lead to disqualification.
- Batteries can be on board or off board. Please take special care if on board.
- Change of batteries not allowed during the match.

In case of use of pneumatic weapons using compressed gases, team has to submit a safety and security letter that the weapon is safe for use.





Round 2:

### **ONE ON ONE KNOCKOUT TOURNAMENT:-**

This round will be the action round. In this round performance and control over the bot would be tested.

- The round may comprise of one or more stages.
- In this round, a one on one match will be held. Losing side will get eliminated and the winning team will face other winning teams.
- Points will be given on the basis of aggression, damage, control and strategy.

#### **Aggression:-**

Aggression will be judged by the frequency, severity, boldness, and effectiveness of attacks that are deliberately initiated by the robot against its opponent. If the bot appears to have accidentally damaged the opponent, that act will not be considered under aggression. The primary parameter for aggression will be the “intent”.

#### **Control:-**

The ability to attack an opponent in different areas by a visible linear displacement or rotation (Considering the bot to be a rigid body for the case the relative motion between any two points are limited to straight line and rotation). If three coordinates are to be used to describe the position of the bot at a particular time (The ability of a bot to jump in space) Then we would request the participating teams to adjust the maximum height achieved by the bot in accord with the dimensions of the arena.

#### **Damage:-**

Through deliberate action, a bot either directly or indirectly reduces the functionality, effectiveness or defensibility of an opponent. Damage is not considered relevant if a robot inadvertently harms itself. Also, if a pressure vessel or a rapidly spinning device on a robot fragments, any damage to the opponent will not be considered "deliberate".





## Strategy (In-game Tactics):-

The robot exhibits a combat plan that exploits the robot's strengths against the weaknesses of its opponent. The strategy is also defined as a robot presenting a defense plan that guards its weaknesses against the strengths of the opponent, or the use of primary weapons is efficiently used to minimize the damage caused by the opponent while launching the attack.

- This round would continue until we are left with a minimum of four teams and those teams will proceed to the final round.

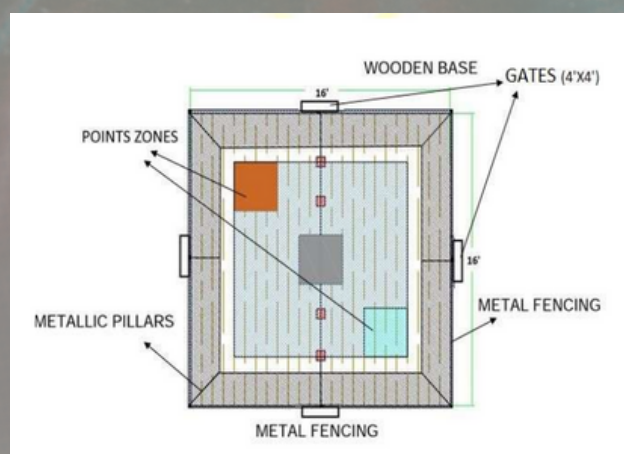
Round 3:

## FINAL ROUND:-DEMOLITION DERBY (DD):-

After the KNOCKOUT ROUND, there is a demolition derby round. This round is final round and would decide the winner.

- The winning bots will fight altogether in the arena.
- The bot that survives for the maximum time wins.
- Complete guidelines about Demolition Derby will be disclosed at the time of the event.
- Modifications to this round are subject to conditions on the day of the event.

## ARENA:-



- Participants are requested to decide their wire length according to arena size.