

Technical Rule Book:

Gear Up: RC Car Racing

Team Size: 3-4

1. A Team must consist of 3-4 members.
2. Use of any other sources such as chemicals, compressed gas, rockets etc. for propulsion is not allowed.
3. If you are making your car then other functional parts like motors and servos, gears, springs, engine, remote control systems, batteries, wheels, braking mechanisms are allowed to be used as directly available from the market.
4. Verify with the organizers if you have the slightest doubt whether component can be used or not.
5. The electric voltage anywhere in the machine should not exceed 12V at any point of time. -o- The team with the minimum time elapsed will be declared as winner.
6. There will be penalty points for touching the robot once the race has started.
7. Detailed description for the granting of points will be disclosed on the spot by the organizing committee.
8. In any case, the bot has to complete the whole track in order to avoid disqualification.

JUDGING CRITERIA

- o- The team with the minimum time elapsed will be declared as winner.
- o- There will be penalty points for touching the robot once the race has started.
- o- Detailed description for the granting of points will be disclosed on the spot by the organizing committee.
- o- In any case, the bot has to complete the whole track in order to avoid disqualification.

Robo Soccer League

Team Size: 2-4

*****Round 1*****

1. In this round the participant will be given 5 balls and 180 seconds time. The bot should kick balls into the goal post without entering into the restricted area.
2. Points will be given as follows: > If the ball enters the goal post without touching the obstacle and the walls 40 points will be awarded. > If the ball enters by touching either obstacles or walls 20 points will be given.
3. Any balls outside the restricted area can be used again to kick goals in the given time.
4. If all the balls are in the restricted area without any goals scored, additional 2 balls will be given and the goals will be given less points as follows: > If the ball enters the goal post without touching the obstacle and the walls 10 points will be awarded. > If the ball enters by touching either obstacles or walls 5 points will be given.
5. Top 4 participants of round 1 will go to round 2.

*****Round 2*****

1. This round will be a one on one match.

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2. Match will start from the centre of the field with the TT ball kept in the central circle.
3. At the starting of the match the bots should be in the blue region of their field.
4. The bot should not cross the opponent's field before match starts. Violation leads to points.
5. For every goal 20 points will be awarded.
6. None of the bot should hold the ball for more than 10secs. If it holds more than the prescribed time, ball will be passed to the opponent team.
7. Bots shouldn't destroy the opponent Bots. They have to take care of their wiring. The wiring should be at a height of 30cms from the game field. Wiring shouldn't touch the game field. If any team tries to stick the game intentionally using wires, penalty of -2 points will be given and the ball will be given to the opponent.
8. Any bot can goal from anywhere on the game field.
9. Every match will be of 5 minutes.
10. If ball goes outside the field then opponent will start the match from that point without any timeout.
11. Finally the winner is the team who scores more points at the end of the match.

*****SPECIFICATIONS*****

Arena

1. The soccer field is 8 ft x 4 ft.
2. Blue field will be of appropriate size as per the specifications of the bot.
3. Goal post is 40 cm in length and 30 cm in height.
4. There are two regions in the field, green field and blue field.

Bot Specifications

1. Maximum dimensions of the bot should be 25cm X 25cm X 25 cm.
2. Maximum of 12v will be allowed on the bot, external supply is allowed.
3. Bot can be controlled by wired or wireless remote.

JUDGING CRITERIA

- o- The team with the maximum points at the end of the match will be declared as a winner.
- o- In case of a tie, penalty shoot-out round will take place similar to round 1.
- o- In case of any discrepancy, organizers decision is final.

Robo Sumo Wrestling

Team Size: 2-4

1. The competition will be played on a knock-out basis.
2. In no case, arena should be damaged by the bot.
3. The team may consist of 2-4 members.
4. Use of IC ENGINE is prohibited.
5. On board batteries must be sealed, immobilized-electrolyte types (such as gels, lithium, NiCad, NiMH, or dry cells).

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*****SPECIFICATIONS*****

Bot Specifications

1. The machine should fit in a box of dimension 750mm x 750mm x 1000 mm (l x b x h) at any given point during the match. The external device used to control the machine or any external tank is not included in the size constraint.
2. The machine should not exceed 40 kg of weight including the weight of pneumatic source/tank. All pneumatic tanks/source and batteries should be on board. Weight of remote controller will not be counted.

Arena Specifications

1. The arena would be rectangular in shape measuring 24ft x 24ft, however the fighting zone will 20ft x 20ft.
2. The arena might be on hard and uneven ground and would be enclosed by wire meshes all around.

Power Supply & Robot control

1. The machine can be powered electrically only. The electric voltage between 2 points anywhere in the machine should not be more than 36V DC at any point of time. If a team is using AC voltage in any of its parts then the voltage should not exceed 36V AC at any point of time as well.
2. The machine could be controlled using a wired or wireless device throughout the fight. In case of wireless control, the robot must be installed with a dual frequency radio to prevent interference with the opponent robot. In case of any interference in the wireless systems, rematch will not take place.
3. Readily available remote controlled systems with dual frequency from the markets may be used.
4. Before the event, each robot will be inspected by the judges and if robot is declared as dangerous either to the spectators or to the course of the event, it may be disqualified on the spot.

Weapon Systems

Robots can have any kind of magnetic weapons, cutters, flippers, saws, lifting devices, spinning hammers etc. as weapons with following exceptions and limitations: > Liquid projectiles. > Any kind of inflammable liquid. > Flame-based weapons. > Any kind of explosive or intentionally ignited solid or potentially ignitable solid. > Nets, tape, glue, or any other entanglement device. > High power magnets or electromagnets. > Radio jamming, Lasers, tesla coils, or any other high-voltage device. > Tethered or un-tethered projectiles. > Spinning weapons which do not come in contact with the arena at any point of time are allowed.

JUDGING CRITERIA

-o- A robot will be declared victorious if its opponent is immobilized.

-o- 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.

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- o- 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 declared as winner.
- o- 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. If, after being instructed to do so, the attacker is not able to do so, their robot may be disqualified. If two or more robots become entangled or a crushing or gripping weapon is employed and get trapped within another robot, then the competitors should make the timekeeper aware, the fight should be stopped and the robots should be separated by the safest means.
- o- 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.
- o- Points will be given on the basis of aggression, damage, control and strategy.
- o- Aggression: Aggression is judged by the frequency, severity, boldness and effectiveness of attacks deliberately initiated by the robot against its opponent. If a robot appears to have accidentally attacked an opponent, that act will not be considered as Aggression.
- o- Control: Control means a robot is able to attack an opponent at its weakest point, use its weapons in the most effective way, and minimize the damage caused by the opponent or its weapons.
- o- Damage: Through deliberate action, a robot 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".
- o- Strategy: The robot exhibits a combat plan that exploits the robot's strengths against the weaknesses of its opponent. Strategy is also defined as a robot exhibiting a deliberate defence plan that guards its weaknesses against the strengths of the opponent.
- o- Judges Decision shall be treated as final.
- o- The event organizers reserve the right to make minor modifications to the above rules. The changes will be duly notified.
- o- The event will be held outdoors. In case of unfavourable circumstances, the event might be held indoor.
- o- In the event of ambiguity, the organizer interpretation of any clauses of the rules shall prevail.

Blind Robo

Team Size: 2-3

1. A team must contain 2-3 members.
2. Use of any other sources such as chemicals, compressed gas, rockets, etc. is not allowed.
3. If you are making your car then other parts such as motors and servos, gears, springs, engine remote control systems, batteries, wheels breaking mechanisms are allowed to be used as directly available from the market.
4. Verify with the organizers if you have the slightest doubt of whether the component can be used or not.
5. The electric voltage anywhere in the machine should not exceed 12 V at any point of time.
6. The robot will be controlled by a team member having plaster on his/her eye. Other team members will help him/her directing the path. The path will be full of obstacles.
7. If the machine halts or tumbles or goes off the track at any point in the track , only one participant is allowed to lift the machine & place it at the nearest checkpoint behind that point.
8. The vehicles should be fully controlled using the remote control unless there is a need to touch the vehicle as stated above.
9. There will be a penalty every time the vehicle strikes the wall/boundary and also every time it requires lifting up by the team member.
10. The time slots will be given on the basis of first come first serve basis, but little duration for practicing is assured to everyone.
11. Organizers reserve the right to change any of the above rules.
12. Organizers and judge decision shall be considered as final and binding on all.

*****Specifications*****

Vehicle Specifications

1. Machine should be fitted in a box having dimensions 300mm x 200mm x 300mm at any moment of time during the race. The external device which is used to control the device is not included in the size constraint.
2. The machine should use DC motor for propulsion. DC motors and servos can be used for steering mechanisms or any other control mechanisms apart from propulsion.
3. The machine should be controlled by a wireless remote controller throughout the race.
4. The vehicle must have two remote control of different frequencies or an alternate frequency remote control which can be switched to either frequency before the start of the game. This is done to avoid the frequency interference between the two competing vehicles. Remote control systems from toys can also be used.
5. The machine must have an on-board power supply to run any mechanism requiring electric power.

Track Specifications

1. The minimum width of the track will be 0.5m.
2. The track will have checkpoints at regular distance

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JUDGING CRITERIA

-o- The team with the minimum time elapsed to complete the track will be declared as the winner.

-o- In any case, the bot has to complete the track in order to avoid the disqualification.

Dark Horse: Line Follower

Team size- 2-4

*****Line Follower*****

1. Course Time: time is measured from the time the robot crosses the starting line until it crosses the finish line. A robot is deemed to have crossed the line when the forward most wheel, track, or leg of the robot contacts or crosses over the line.
2. Time Limit: a maximum of 3 minutes is allowed for a robot to complete the course. A robot that cannot complete the course in the allotted time shall be disqualified.
3. The team with less course time will be declare as a winner.

*******General rules*******

-o- Timekeeping: time will be measured by a judge with a stopwatch, based on the availability of equipment. In either case the recorded time will be final.

-o- Autonomous Control: once a robot has crossed the starting line it must remain fully autonomous, or it will be disqualified.

-o- Arena Edges: a robot that wanders off of the arena surface will be disqualified. A robot shall be deemed to have left the arena when any wheel, leg, or track has moved completely off the arena surface.

*****Bot Specifications*****

-o- Size and Weight Limits: The maximum size of a robot is 30 x 30 cm, the maximum weight is 3 kg. Dimensional and weight limits for robots shall be strictly enforced. Robots must have passed inspection prior to competing.

The line following course will traverse a white paper rectangle, 44" wide and 96" long. The line will be a black, 3cm wide line, traversing the arena from end to end. There will be one or more crossovers (e.g. places where the line crosses itself). The line course shall have 1 or more sharp right-angle, but no angle will be greater than 90 degrees.

-o- The wall follower course will contain a 2cm thick wall. 1.5cm apart from the wall, there will be a marking considered as the closest reach of robot towards wall. Any robot crossing this line will be disqualified.

-o- Beyond that line there will be 35cm wide track for robot to follow the wall.

JUDGING CRITERIA

-o- 8 robots with least course time while accurately tracing the line for first round will be selected for second round

-o- The robot to complete the final course in the shortest period of time while accurately tracking the course wall from start to finish will declared as winner.

Aqua NFS

RULES

A team must contain 2-4 Members.

The boat must be maneuverer by a wireless remote control, if any controls are used.

The event would be conducted in TWO ROUNDS described as below:

ROUND 01:

~ Test your Propellers. The boat has to reach the finish line in the least possible time. "BEST OF TWO TRIALS" would be taken.

~ This round is basically used for "TESTING THE SPEED and TIME" of the Boats.

~ The arena would be FREE of OBSTACLES.

~ The number of teams qualifying for the second round will depend upon the number of participants.

ROUND 02: (Speed and Manoeuvre)

~ This round would test the speed, steering and accuracy of your boat.

~ There would be obstacles and a well-defined maze for your boat to follow without hitting the boundaries of the maze.

NOTE: TWO SECONDS PENALTY FOR HITTING THE BOUNDARY. SPECIFICATIONS:

Boat specifications:

~ At any point of time the boat dimensions should not exceed the following:

* Length- 70cms

* Breadth- 40cms

* Height- No Constraints ~ Boat can be powered by either:

*A DC Electric Motor (brush or brushless), or

*By other setups which include Hydro drives/Jet drives.

1. The Potential Difference at any point should not be more than 24V DC.
2. Readymade Components for the HULL are not entertained at any cost, if found guilty would be disqualified.

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3. However, rudders, propellers and other electric motors (SERVOS) could be taken directly from other model/toy RC boats.

Necessary steps and precautions should be taken to so that the electric components are properly insulated so as to keep them safe and off from damage by water.

POOL DIMENSIONS

The event would be conducted in the assigned pool of dimensions of (4mx3mx0.5m).

Wall Follower

Team size- 2-4

1. The robot is supposed to follow the given boundary maintaining a specified distance from the wall
2. The same course time will be counted in this round also.
3. Maximum of 90 sec will be provided to complete this round. If any candidate fails in these 90 seconds, will be considered as defeated.

*******General rules*******

1. Timekeeping: time will be measured by a judge with a stopwatch, based on the availability of equipment. In either case the recorded time will be final.
2. Autonomous Control: once a robot has crossed the starting line it must remain fully autonomous, or it will be disqualified.
3. Arena Edges: a robot that wanders off of the arena surface will be disqualified. A robot shall be deemed to have left the arena when any wheel, leg, or track has moved completely off the arena surface.

*****Bot Specifications*****

-o- Size and Weight Limits: The maximum size of a robot is 30 x 30 cm, the maximum weight is 3 kg. Dimensional and weight limits for robots shall be strictly enforced. Robots must have passed inspection prior to competing.

*****Course Specifications*****

1. The wall follower course will contain a 2cm thick wall. 1.5cm apart from the wall, there will be a marking considered as the closest reach of robot towards wall. Any robot crossing this line will be disqualified.
2. Beyond that line there will be 35cm wide track for robot to follow the wall.

JUDGING CRITERIA

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-o- The robot to complete the final course in the shortest period of time while accurately tracking the course wall from start to finish will declared as winner.