robotex International

ROBOT WHEELS RULES

COMPETITION COORDINATOR

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1 Introduction

The goal of the competition is to bring a new exciting and entertaining competition to the robotics field. The aim of the competition is to simulate downhill mountain biking and Hot Wheels track as a combined on one field.

2 The Field

1. The color of the field is not determined.
2. The wall at the edge of the field is white and its height is 12 ± 3 cm.
3. The trajectory of the track is curved and downhill.
4. The width of the track varies between 30–100 cm.
5. The field may have different obstacles.

- Fixed walls, which are installed in a way that a robot who moves along the edges of the wall is not capable of passing the track. At the middle of the track, fixed walls can also be placed. The distance between the obstacle wall and the track wall should be at least 30 cm.
- Loose materials, which can be installed at different parts of the field.
- Holes that have a diameter of up to 4 cm and a depth of up to 4 cm.
- Narrow passage that has at least 30 cm width.
- A 360-degree loop, which requires the robot to be upside down for a moment to pass. The start and end of the loop will be identified by a green and red band (width 10 cm) on the floor of the field prior or after to the loop. Color codes: Green (CMYK: 100, 0, 100, 0 – RGB: 0, 255, 0) and Red (CMYK: 0, 100, 100, 0 – RGB: 255, 0 , 0).
- A 90-degree angled turn.
- A passageway angled sideways. (Appendix 1.)

6. **3,3 meters is the highest point of the field**, so the robot will be climbing up to 3,3 meters.

3 The Robot

1. The robot must be autonomous.
2. In the starting position, the maximum dimensions of the robot are 20 x 20 x 30 cm (length x width x height), mass of up to 1 kg.
3. The robot is not allowed:
    - to change its dimensions.
    - to damage the field and endanger the spectators.
    - to emit gases, liquids or dust.
4. The robot must have a start and stop button or a remote control (recommended).
5. EDF - Electric Ducted Fan is allowed to be used in robot structures, but it is necessary to protect them safely to avoid harming either the operator or the referee.

4 The Competition

7. The competition is held in one age category.
8. Team can consist maximum of 3 members.
9. The winner is the robot that completes the track with the fastest time OR passes most sections of the track.

- Each fully passed section on the track gives 1 point. (The robot needs to fully cross the new section line to earn 1 point for that section. The sections are determined by the organizers and marked on the track or side of the track.)
- If the robot completes fully the track, the robot earns maximum points and the time is recorded.

10. **Each robot has 5 minutes in the qualification attempts.** Teams can do as many rounds in that time as possible. The best result will be recorded after the attempt has ended.
11. At the beginning of the competition, robots are placed at the starting line, an attempt begins when the robot crosses the starting line.
12. Only one robot can be on the track at a time.
13. The competition consists of qualifications and finals.
14. In qualification rounds each team has only 1 attempt, they need to complete their attempt in the time given. (usually 2-4h, depending on the time schedule and number of competitors).
15. The top 5 competitors will compete in the finals.
16. **Each robot has 3 minutes in the finals.** Teams can do as many rounds in that time as possible. The best result will be recorded after the attempt has ended.

5 Organizing

1. The robot must be registered before the competition. The registration process includes technical inspection of the robot, marking the robot with a number sticker, and the order number will be drawn.
2. Technical inspection must be completed by the time that is specified by the organizers. The current score is displayed next to the track.
3. All questions and problems arising during the competition are solved by the referee.
4. Protests can be submitted by the team member who was first registered. The final decision regarding any appeals is made by the referee and/or the organizers. All complaints must be reported to the referee during the match or right after the ending of the match. Complaints filed later will not be accepted. The final decision regarding any disputes or inconsistencies, is always made by the referee. **NB! Rude behaviour is not tolerated and the team who does not respect the referees / head referees decisions can be disqualified by the head referee and/or event organisers.**

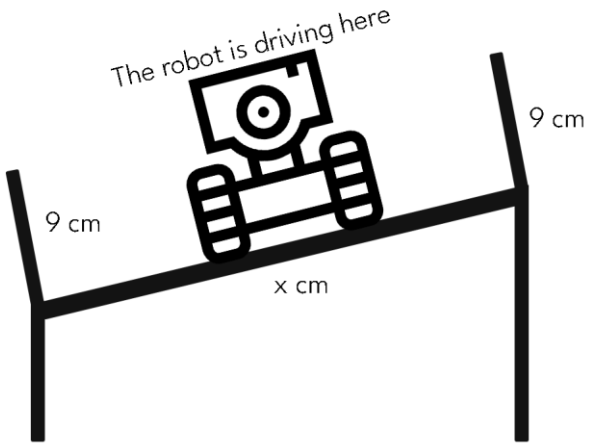
NB! The arena has at parts uneven lighting and infrared noise, which may disrupt the work of sensors during the competition. For this reason, the organizers recommend using covers or blinds for sensors, testing the sensors under intense lighting conditions or even under direct sunlight to imitate the lighting conditions of the competition arena.

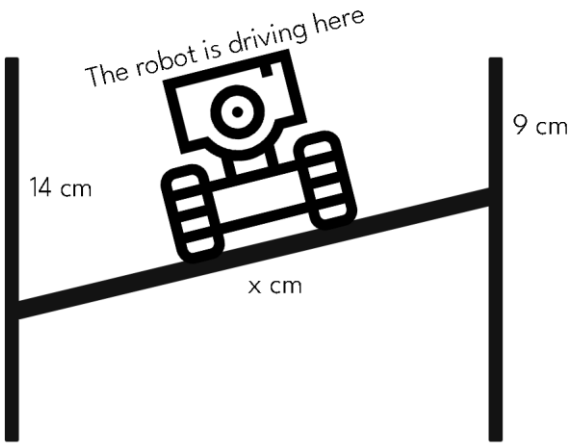
5.1 Winners one-year break

Winners of 1st place cannot compete in the same category next year– they must take a one-year break from that category. At least 50% of the team must consist of non-winners. If the winners' team has three members, next year they should have at least one new member who was not previously on this team to compete in the same category again instead of taking a year off from it. This rule is aimed at bringing new people, giving everyone a fair chance and encouraging recurring winners to try new competitions they usually do not participate in and to educate and engage new beginners in the field of robotics. *****

*** The rule complies only with Robotex International standards and is used for Robotex International competition.**

6 (Appendix 1) A passageway angled sideways (Example)





7 Revision history

1. 26.05.2025 The rules are created.