# LINE FOLLOWING

ROBOTU FIESTA 2022

## CATEGORIES OF ROBOTS

a. Line tracking robots;
b. Line–following robots using a turbine;
c. LEGO line tracking robots.
The organizers reserve the right to combine groups a and b depending on the number of participants.

## ROBOT

1. The robot must operate autonomously.
2. The maximum dimensions of the robot are 25 x 25 x 25 cm and the mass is 1 kg. The measuring box for the LEGO® robot will be 25 x 25 x 25 cm with a +2 mm margin.
3. The robot must cover the line with its body during the run, otherwise the run is considered unsuccessful.
4. The robot must not damage the field or endanger the spectators.
5. It is forbidden to use more than 24V in the robot.
6. The robot must have a start and stop remote control. ATTENTION! A remote is not required for LEGO robots – they can be operated using the buttons on the robot.
7. The body of the robot must completely cover the light beam of the timing system at a height of 2 cm.

## ADDITIONAL REQUIREMENTS FOR LEGO ROBOTS:

1. The robot must be constructed from original, licensed LEGO® or HiTechnic® parts. The exception is for cables – they must be licensed by LEGO®, HiTechnic® or Mindsensors. LEGO® RCX sensors, motors or other components are prohibited.
2. The robot must use only LEGO® licensed or recommended batteries.

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## COMPETITION FIELD

1. The field is made of white synthetic material,
whose area is from 3 to 100 m2.
2. The track can be open or closed.
3. Line width is 15mm for classes a and b. 20mm wide for LEGO robots (class c).
4. The minimum turning radius is 0.
5. Sharp corners can be over 90°.
6. The line surrounds 25 cm of empty space on both sides, except at intersections.
7. The start and end lines are marked on the field separately. On a closed track, the start and finish line may coincide.

## COMPETITION

1. Robots compete by driving on a track in one direction.
2. The optical timing system measures start and finish times at the start and finish lines.
3. The test starts after crossing the start line and ends after crossing the finish line.
4. Timing continues throughout the test. The robot has crossed the line if it completely covers the light beam of the timing system at a height of 2 cm.
5. Each robot has an unlimited number of attempts during the qualification time set by the organizers.
7. When calculating the results of those who enter the final stage, the best lap time from all attempts is taken.
9. The 5 robots with the fastest time in the qualification enter the final stage
10. Each robot has 3 minutes in the final. A team can make an unlimited number of attempts during that time. Times of qualifying runs are cancelled.
11. The first 3 places are determined by the fastest times in the final.
12. Robots must start driving only after the referee gives a signal
13. The maximum driving time is 2 minutes. If the robot exceeds this time, the attempt is considered failed.
14. It is forbidden for the robot to drive off the track. If this happens, the attempt is considered a failure.
15. One team can consist of up to 3 members.

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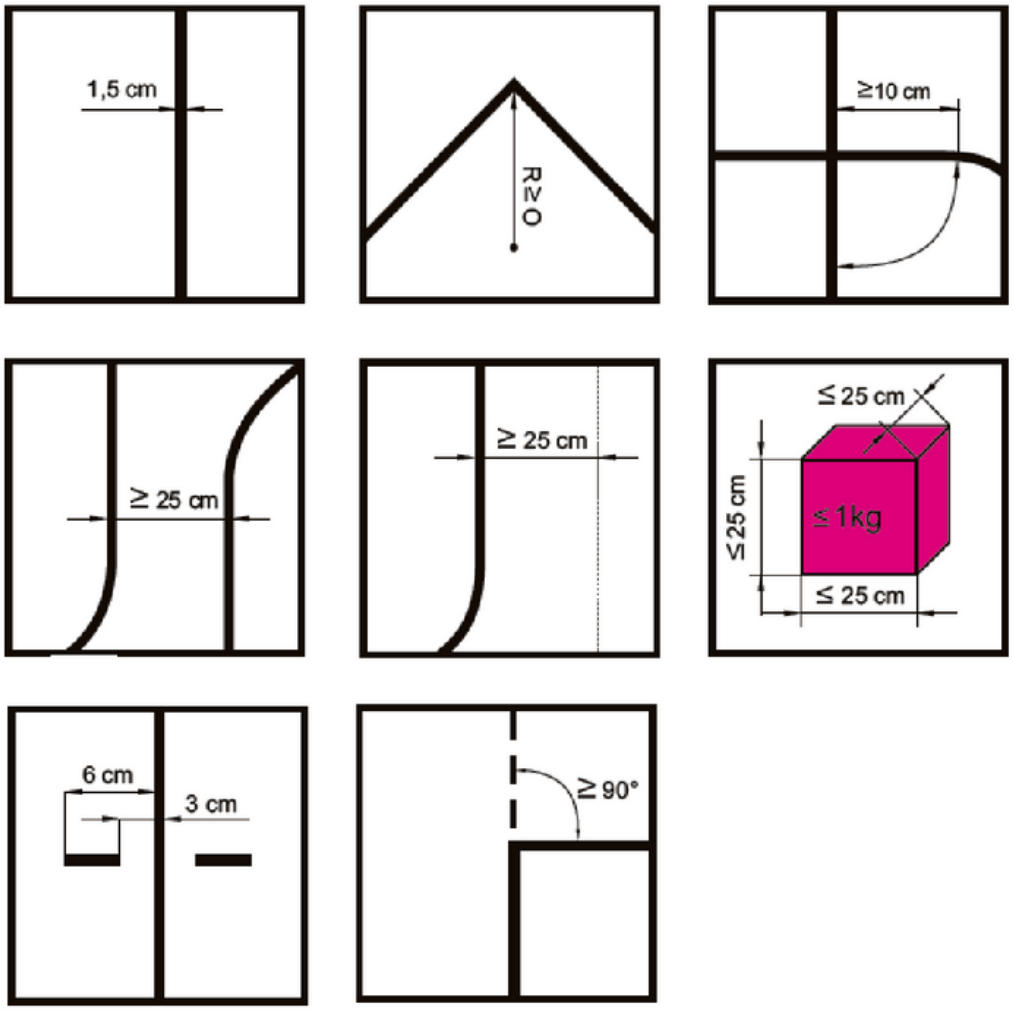
## ORGANIZATION

1. Competition and test fields are made of the same material.
2. The robot must be registered before the competition. During registration, a technical inspection is carried out, a number and a sticker are given, which must be affixed in a visible place on the robot, and the start and stop functions are also checked.
3. The technical inspection must be performed at the time announced by the organizers.
4. All questions and problems that may arise during the competition are decided by the referee.
5. Final decisions on appeals are made by the judge and/or the organizers. All complaints must be reported to the referee during or immediately after the competition. Claims submitted later will be rejected. The final decision on disagreements or inaccuracies rests with the judge.

## TRACK AND ROBOT MEASUREMENTS