

Segway Race RoboFinist competition rules

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1. General Provisions

The run is held by each team independently. One team plays one robot.

1.1. Task Description

The distance must be completed by the robot along the specified trajectory in a minimum of time.

1.2. Restrictions

A team must meet the following requirements, unless otherwise specified by the Organizing Committee of a particular Event:

- the number of participants in the team is 2 or less (the number of coaches/team managers is not limited)
- the oldest member of the team is 19 years old or less in the year of the competition.

2. Requirements for the Robot

The robot must meet the following requirements:

- length not more than 400 mm;
- width not more than 400 mm;
- height not more than 400 mm;
- weight not limited.

The robot must not violate these requirements after the start of the race.

The robot must be absolutely autonomous; remote control in any form is prohibited. The programs run by the robot must be written by the participant(s) only.

Robots must be assembled from individual parts. Pre-built robots and/ or robots with manufacturer pre-installed motion programs, are not eligible for competition.

The design of the robot must ensure the actuating of the «start-finish» system.



The tires and other components of the robot (when off) in contact with the ground must not be capable of lifting and holding an 80 g/m2 A4 sheet for more than 2 seconds.

The robot must have no more than 2 support points when moving.

Only the rotation bodies of curves (wheel, ball, ellipse, etc.), i.e. those having two radii of curvature in mutually perpendicular planes, are allowed as supporting structural elements.

Keeping the robot in position at two points of support must be achieved only by the robot's operation.

3. Specifications of the field

The field is a flat rectangular white surface made of no particular material with a black line on it. Optionnaly, a one piece banner with a density of 400-500 g/m2.

The starting (finish) line is marked by a dash line perpendicular to the track line. It is two separate strips in the color of the track line, 10 mm wide, 50-75 mm long with a gap between them of half the maximum allowable width of the robot.

The line consists of three straight sections at least 1200 mm long, connected by two curved sections in the form of semicircles (see Fig.1).

Line Specifications:

- width 50 mm;
- radius of curvature of the track not less than 300 mm in any point of the line.

There are two fixed obstacles placed on the line: the «brick» and the «hill». For the description see the «General Contest Rules»

The size of the «hill»: width (b) - 400 mm, length (l) - 800 mm, height (h) - 70 mm.

Obstacles are fixed no closer than 300 mm from the beginning of the curvature of the line, perpendicular to the track line and symmetrical to it, as follows:

- «brick» with its smallest side on the second straight section of the track;
- «hill» on the third straight section of the track.

The robot operator may remove one or both obstacles at his or her discretion





Figure 1. Field example

4. Contest Procedure

Robots are given 3 minutes to complete the task.

At the start the robot must be placed in front of the start line so that its projection does not cross it.

At the discretion of the Officials, time is fixed by the «start-finish» system or by the Judge using a stopwatch. The fixed time is final and cannot be reviewed.

The attempt stops if the time allotted for the run is over.

The run time is counted from the moment the robot crosses the starting line with any of its support point to the moment the robot crosses the finish line with any of its support point.

The number of attempts is determined by the Organizers on the day of the competition.



5. Disqualification

The attempt is disqualified if:

- the robot is not autonomous (the robot is under an external control);
- participant touched the robot or the field during the run;
- the robot has not complete the task in a specified time;
- the robot has left the line (the robot projection is not above the line);
- the «brick» bypass maneuver (the robot left the line in front of the obstacle and returned to the line behind the obstacle in a straight section) takes more than 15 seconds and/or the point of return to the track is further than 300 mm from the obstacle.
- the robot has lost its balance (any part of the robot other than the supports has touched the field).

6. Scoring

Points are awarded for successful passage of the track elements according to the table 1:

Table 1. Track elements and points scored for them

Track element	Points for passing element
Straight section of the line without obstacle	10
Straight section of the line with obstacle	50
Curved section	20

If the obstacle is removed by the operator, the points for passing the section are awarded as for a straight section without obstacle.

The attempt with the highest score is counted. If the points are equal, an attempt with the minimum run time is counted.

7. Procedure for Determining the Winner

The winner is the team with the highest score.

If the points are equal, the team with the minimum run time gets the advantage.