

## REGULATIONS «FOLKRACE»

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## 1 Introduction

The FOLKRACE challenge simulates the immersive nature of the cars' rallycross.

## 2 Objective

Upto five (5) robots are accessing the field and are competing simultaneously against each other with the objective to complete the fascinating field in the correct direction as many times as possible and collecting the most points as possible. You can parts of the race in this [Video](#).

## 3 The Team – Eligibility for Participation

- The competition is for teams, not individuals.
- The team consists of two (2) – five (5) players.
  - In ROBOTEX INTERNATIONAL in Estonia the team may consist of up to three (3) players. So, the winning team of ROBOTEX CYPRUS that will be participating in ROBOTEX INTERNATIONAL may only be allowed to register up to three (3) players. This remains to the discretion of the ROBOTEX INTERNATIONAL Organizers.
- Only one team member may be closer to the track than two metres and he/she is considered the leader of the team.
- **Only one player** of category X is eligible to participate in a team of the immediate higher category. That is:
  - A player of category «4<sup>th</sup> – 6<sup>th</sup> Grade Primary» is allowed to participate in a team of category «Gymnasium»
  - A player of category «Gymnasium» is allowed to participate in a team of category «Lyceum»
  - A player of category «Lyceum» is allowed to participate in a team of category «University».
- The opposite of the rule 3.4 above does not apply. That is, one player of category X is not allowed to participate in a team of any lower category. For example, a player that belongs in category «Lyceum» is not allowed to participate in a team of category «Gymnasium» or «4<sup>th</sup> – 6<sup>th</sup> Grade Primary » or «1<sup>st</sup> – 3<sup>rd</sup> Grade Primary».
- The coach of the team is not allowed to participate in the same competition with his/her team.

## 4 The Field

1. The field's surface colour black and the walls are white.
2. The field is made from light wood.
3. The wall at the edge of the field is white and its height is  $12 \pm 1$  cm.
4. The trajectory of the track is curved and closed.
5. The width of the track varies between 90–120 cm.
6. The field may have simple obstacles, such as hills, holes, loose material. Additionally, there may be hindering walls, which are installed in a way that a robot who moves along the edges of the wall is not capable to pass the track.
7. The tracks can be on two levels. This means, that a part of a track may cross another via a bridge, etc.

## 5 The Robot

1. The robot must be autonomous.
2. At the starting position, the maximum dimensions of the robot are (20 cm Length x 15 cm Width), an unlimited height and a 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;
  - to actively ram other robots;
  - to use other robots for movement.
4. The robot must have a start and stop button.

## 6 Categories & Levels

1. The competition is executed for the Engino ERP, Engino E40 STEM & Robotics Produino ENGINO , LEGO EV3 and Arduino platforms for the following categories:

Category →	Primary	Gymnasium	Lyceum	University
Level	4 <sup>th</sup> – 6 <sup>th</sup>	1 <sup>st</sup> – 3 <sup>rd</sup>	4 <sup>th</sup> – 7 <sup>th</sup>	
Folktrace	√	√	√	√

## 7 The Competition

1. Based on the number of teams participating in each category/level a number of sub-groups will be created.
2. The number of robots in each sub-group will be at most five (5). The sub-group in which each robot will be assigned will be decided by an algorithm implemented by the information system of the organization.
3. The robots in each group are competing in three (3) races. The duration of each race is three (3) minutes.
4. At the beginning of each race, the robots are placed at the starting line.
5. The starting positions of the robots in each sub-group will be drawn by lots.
6. The start signal will be given once the competing teams are ready.
7. The robot is allowed to begin its movement five seconds after the start signal.
8. If the robot starts to move before the appointed time, it will be considered as a false start.
9. The robot that makes a false start, receives a warning from the referees, if it happens for the second time, one point is subtracted from the robot. In case of a third fault start the robot will be automatically disqualified.
10. The robot that has completed the race or has been qualified will be removed from the field by the leader of the team by the order of the referee.
11. If the competition is stopped (for example, all robots are still for 15 seconds), the referee has the right to give an order to the leader of the team whose robot is preventing the movement of the other robots to remove the robot from the field.
12. The robot that prevents the movement is positioned at the same place after 10 seconds.
13. If the robot stumbles during the competition and does not prevent other robots from moving, then the leader of the team has the right to decide, whether the robot:
  - is left down in the same place;
  - is returned to the starting line and restart the race (with the time counting).
14. If a robot is stuck, the team has the right to ask that the robot be placed back on the starting line. Given permission, a team member may do so without disrupting other robots or participants.
15. If the robot is placed at the starting line during the race for whatever reason, one point will be subtracted from the points earned so far by the robot.
16. Upon violation of the rules, the referee may disqualify and remove the robot from the track.

## **8 Declaring the Winning Team**

1. The winner is the robot that earns the most points.
  - Each correct completion of the lap gives one point.
  - A lap is considered completed once the robot crosses the starting line, depending on the movement direction, with the correct direction of movement being determined immediately before the particular race.
  - For every incorrect completion of the lap (i.e towards the opposite direction decides) one (1) point is subtracted from the robot.
  - Points are also subtracted from the robot based on the points 7.9 and 7.15 above.

The declaration of the winning team in the FOLKRACE challenge will be decided based on the following procedure:

2. Upon completion of the three (3) races of all robots of all categories/levels, the ranking of the robots will be realized.
3. The ranking will be based on the total number of points accumulated by each robot in the three (3) races.
4. If there is a draw and the winner of a category/level can not be decided, an additional race amongst the robots with equal points will be executed.
5. The winner of the additional race is the robot that first manages to cover one lap of the field in the designated direction.
  - The starting positions of the additional race will be drawn by lots.
  - The points of each robot participating in the additional race will be added to the existing total points of the robot; thus the ranking for the three (3) races will be decided.
6. The robots with the highest number of points in each category/level will be promoted to the final round (best-of-the-best) where the final ranking is decided and the winning robot will be declared.
7. In the final round, robots will compete in one (1) more race of three (3) minutes duration and the final ranking will be realized based on the number of points achieved by the robots.
8. In case of a draw amongst two or more robots in the final round, the process is repeated amongst these robots based on the process above so that a winner can be declared.

## 9 Obstacles

### 9.1 Bridge



Figure 1: Bridge

### 9.2 Hole

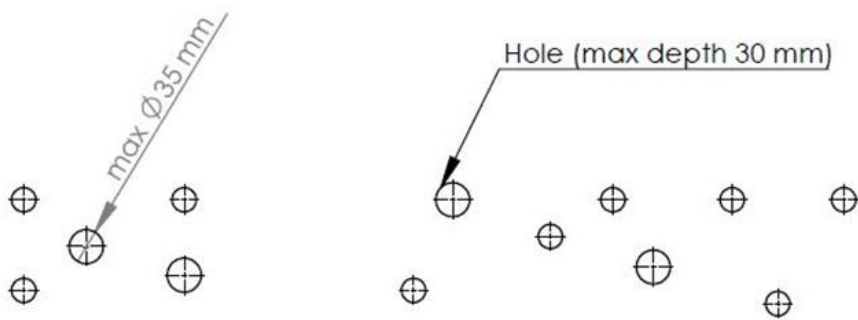


Figure 2: Hole

### 9.3 Loose material (rubber pieces etc.)

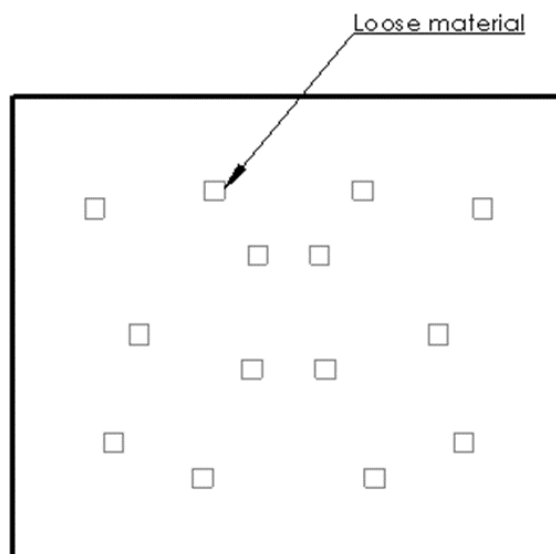


Figure 3: Loose material

### 9.4 Hindering wall

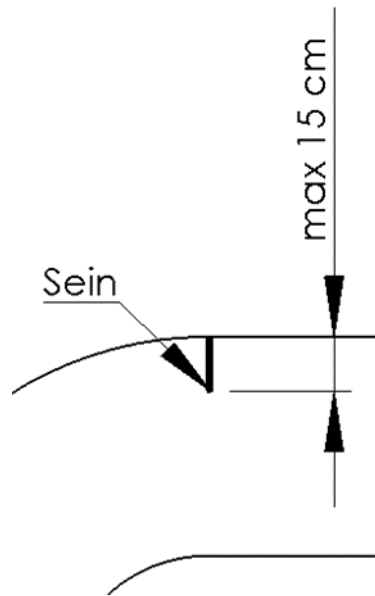


Figure 4: Hindering wall (top view)

### 9.5 Sponge and unevenness

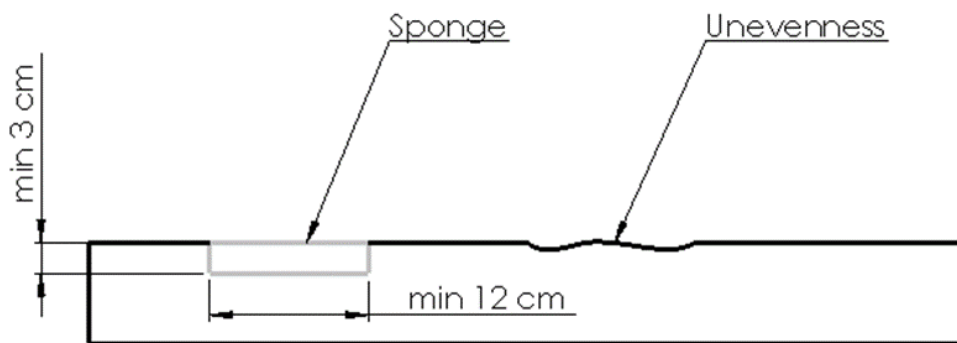


Figure 5: Sponge and unevenness

### 9.6 Post

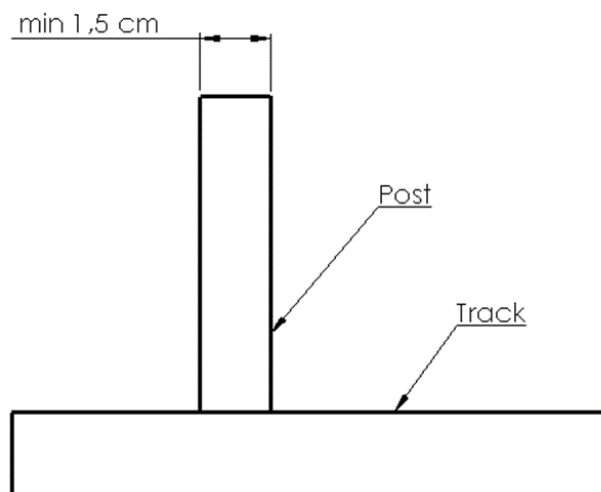


Figure 6: Post (side view)



## 10 Terms and Conditions of Participation

1. Participation in ROBOTEX CYPRUS assumes and requires acceptance of all terms and conditions for participation by competitors, the coaches and the organizations they represent.
2. In case of any difference in the competition rules between the English and the Greek versions, the English version is considered as correct.
3. 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 in which it will compete which is generated by an algorithm in the information system supporting the ROBOTEX CYPRUS organization.
4. In this challenge, there are five (5) referees, each of them inspecting the performance of one robot participating at any given moment. The judges will hold a small flag that they will raise up and wave it every time the robot they control is completing one lap. An additional head referee may also be present to supervise the whole process.
5. All questions and issues that may arise during the competitions must be reported to the judges.
6. The final decision about objections will be taken by the judges in cooperation with the organizers.
7. Judges' decisions on any objections are considered final and can't be challenged by participants, the coaches or the organizations they represent.
8. In the case of a deliberate alteration or change of marking of the unique number of robots, the coach and his team will be automatically expelled from the event. As a result they will not be able to take part in any other challenge they may have enrolled. The coach and his team will leave the venue immediately. The coach also loses the right to take part in the next ROBOTEX CYPRUS event and is automatically excluded from participating in ROBOTEX INTERNATIONAL in case one of his/her teams has won a ROBOTEX CYPRUS competition. The Organizing Committee reserves the right to publicly announce the coach, the team and its members.
9. It is expected that both the coaches and the members of the teams will exhibit a spirit of noble rivalry and will behave with mutual respect, decency and esteem both to themselves and to the organizers, judges and volunteers. The behaviour of all coaches and team members should promote "fair play". Therefore, the Organizing Committee reserves the right to expel anyone from the venue of the event who violates the above principles of good practice.

## 11 Robot Technical Control

1. An initial technical control of the robot technical control will take place on the day of the competition at an area and on time specified by the organizers.
2. Technical control takes place before each phase of the competition (preliminary, qualifying, final) in which the team may participate.
3. Failure of a team to come in time for a robot's technical check leads to the team being excluded from the event.
4. The leader of the team only is responsible to take the team's robot for technical control.
5. Technical control includes the control of the robot based on the above and the section "5. The Robot". If the robot does not meet the requirements it will not be accepted to compete and will automatically be disqualified from the event.

## 12 Changes and Cancellation of Rules

1. Any changes and/or cancellations in the rules of the competition are decided by the Cyprus Computer Society in consultation with the Organizing Committee of the CYPRUS ROBOTEX CHALLENGE. You may address comments and suggestions to the Organizers at [robotex@ccs.org.cy](mailto:robotex@ccs.org.cy).