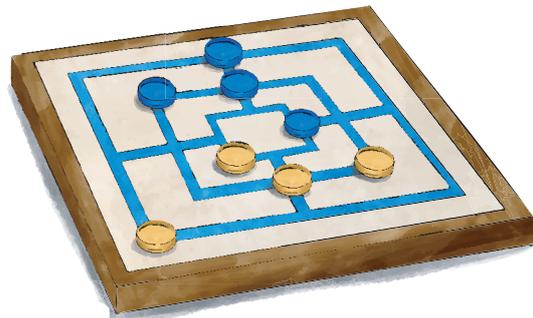


Engineer Challenge General Rules



organized
by



1. The Robot

1.1.

To build the robot competitors need to use only LEGO parts and elements. Controllers, motors, and sensors can only come from LEGO Education Robotics sets. For controlling the robot competitors can use:

-  LEGO Mindstorms EV3,
-  LEGO Mindstorms Robot Inventor,
-  LEGO Spike Prime controller.

The only third-party sensor allowed is the HiTechnic Color Sensor. For connecting motors and sensors competitors can only use LEGO materials.

In case of rule violation: If a robot has any forbidden parts on it (not LEGO), the individual / team will be disqualified from the competition.

1.2.

All needed equipment and devices has to be provided by the team:

-  robot,
-  spare parts,
-  tablet/computer,
-  software,
-  cables,
-  game objects etc.

The only exception is the game mat which will be provided by the organizers for each competitor.

1.3.

Any software or firmware is allowed to be used on the controller.

1.4.

The maximum dimensions of the robot before it starts performing the tasks, is limited to 25 cm length and 25 cm width. There is no limitation on the height. There is no size limitation during the robot run but for maximum points the robot will have to fit in the 25 x 25 cm finish area at the end of the robot run.

In case of rule violation: If the robot is oversized before it starts performing the tasks, the individual / team will get a 50% reduction of their achieved points as a final score.

1.5.

The robot must perform the tasks autonomously.

In case of rule violation: see points 4.4. and 4.5.

1. The Robot

1.6.

Before the start of the robot run the uploaded video has to obviously show the display of the controller so judges can see without doubt that Bluetooth and Wi-Fi is switched off .

Important: There is no actual penalty imposed in case the video does not have this part recorded. However, it is for the benefit of the team that they include this in their video, because if suspicion rises that the robot was remotely controlled, it may become useful evidence. If the recording of the switched off Bluetooth and Wi-Fi is missing, head judges might decide against the team in such cases. (See points 4.4. and 4.5.).

1.7.

Competitors can upload their program to their robot (via cable or wireless connection) or make any calibrations of the sensors before the competition run starts. In this aspect the competition run starts when the video starts with the requested shots (see point 3.3.). However, these are not counted into the time of the competition run. (See point 3.8.)

In case of rule violation: If any program upload or calibration takes place during the video recording the team will be disqualified from the competition.

2. The Game Mat

2.1.

All age groups have the same size game mat: size B0, which is 1000 mm x 1414 mm.

2.2.

All black lines that are meant to aid the movement of the robot is 20 mm wide.

2.3.

The material of the game mat is paper, more specifically: polypropylene film matte greyback 170 mic.

2.4.

The game mat will be delivered to all competitors in time.

2.5.

Always place the game mat on a leveled ground so it will not affect the movement of your robot.

2. The Game Mat

2.6.

Teams will be required to collect the needed game objects in time. When deciding on the game objects we picked those that are probably already available in an average household or can very easily be acquired.

2.7.

It is forbidden to place any objects next to the game mat that helps or manipulates the movement of the robot by any means.

In case of rule violation: If such object is used (e.g. for navigation of the robot) then the team will get a 50% reduction of their achieved points as a final score.

2.8.

Organizers will record an explanatory video for all rules for each category and age group. We kindly ask all competitors to watch these as the videos are considered as part of the official rules!

3. The Competition

3.1.

The competition starts with an official opening ceremony at 8:00 am (CET) 13rd January 2022.

3.2.

The video of the competition run, and the documentation of the robot's program have to be uploaded to the competition platform by 11:59 pm (CET) 20th January 2022. Files after this deadline will not be accepted. We advise you to do the upload as early as possible and do not leave it for the last minute.

3.3.

The uploaded video has to contain the following:

-  Full, all-angle shot of the robot, including a zoom-in on the display of the controller so judges can make sure the robot is valid for competition. This is when you will also have to show the dimensions of the robot meets the rules with a prepared measurement tool. You need to make the measurement tool by putting together 26 pieces of 2x4 LEGO bricks, which makes up 25 cm and put this next to the robot for reference.
-  Fully recorded randomization during which the involved game objects are placed on the game mat. It is important that one competition round can only have one randomization. If the video presents two or more randomizations the judge will consider it as if there was no randomization, because they cannot decide which one is valid for the round.

3. The Competition

-  Full, all-angle recording of the game mat and the game objects on it so judges can make sure the setup is valid by the rules.
-  This is when the robot can start performing its tasks and the whole robot run also has to be recorded.
-  When the robot and the robot run stops (no matter how) please make sure to zoom-in on the most important game objects so judges can see if the tasks were solved.

3.4.

The video has to be one uncut recording. The raw video cannot be manipulated in any ways and no movie tricks are allowed, including cuts or speed up. It is important that all these rules apply to the whole video, not just when the robot is performing its tasks, but of course the competition run's official time starts when the robot starts (see point 3.8.). We recommend that you do some rehearsals before doing the final recording. Also, it is better to record more runs so you can pick the best one to upload.

In case of rule violation: If a video has movie tricks, cuts, or any manipulations the competitor will be disqualified from the competition for trying to mislead the judges.

3.5.

One competitor can upload only one video file which has to be named the following: COMPETITOR_NAME_AGE_GROUP_EDUROBOTICSCUP.mp4/avi/wmv (e.g. PRANCING_UNICORNS_MASTERS_EDUROBOTICSCUP).

3.6.

Allowed video formats are: mp4, avi, wmv.

3.7.

The documentation of the robot's program has to be a pdf file.

3.8.

The robot has 2 minutes to perform all the tasks, the maximum official time of a competition run is 2 minutes (120 seconds). Time starts when the robot starts moving with a push of a button on the controller.

3.9.

The robot can do the tasks in any order.



3. The Competition



3.10.

The competition run and its official timer stops when:

-  the 2 minutes are up,
-  one of the competitors (or anyone else) touches the robot, the game mat, or the game objects,
-  the robot completely leaves the game mat (its projection is completely outside the game mat).

3.11.

When a judge is watching a video, they will count the time with a stopwatch (or stopwatch function on their smartphone). If the robot is taking more than 2 minutes to perform the tasks the judge will stop the video at 2 minutes and give the points earned till then. Since in this case the judge has not zoomed in for a clear vision of all the game objects, only the obvious points will be given. It is important for the competitor to check and make sure that the robot finishes within 2 minutes.

3.12.

When all videos have been submitted and judges gave the points for the competitors each team has to confirm their final score. Any team has the opportunity to write an appeal against their score by sending an email to judge@wro.hu. Whether or not a competitor appealed against their score in the end (after the appeal was dealt with) the competitor has to confirm their final scores in order to be part of the final ranking. In case an individual / team does not confirm their final scores by the deadline, they will not be officially ranked in the final results.

3.13.

The competitors will be ranked based on their final score for the competition run. In case of equal points, the official time of the competition round will count (the faster robot is ranked higher). If both points and the time is equal, then we call it a tie.

3.14.

The final score can never be minus, the lowest score is 0. The maximum time of a competition run is 2 minutes that is 120 seconds.

3.15.

In case a competitor does not upload any videos, their result is automatically 0 points with 120 seconds time.



4. Prohibition and Rule Violation



4.1.

It is forbidden to use any non-LEGO elements when building the robot. Regarding the robot, the elements and game objects it is also forbidden to use fixing material, such as screw, nail, glue, duct tape etc.

In case of rule violation: If the rule is violated regarding a game object then the competitor will not get any points for that given object. If it is violated regarding the robot then the competitor will be disqualified from the competition.

4.2.

It is forbidden to use any colors different from those specified in the rules. This does not apply to any game objects whose color is not specified, therefore not important.

In case of rule violation: If a game object violates the rule then the team will not get any points for that object. If it is violated by the game mat itself then the team will get a 50% reduction of their achieved points as a final score.

4.3.

Two or more competitors cannot use the same robot. All suspicious cases will be investigated by head judges.

In case of rule violation: If the violation is proven the team will be disqualified from the competition.

4.4.

It is forbidden to control the robot via any kind of cable or wireless connection. All suspicious cases will be investigated by head judges (e.g., matching the movement of the robot with the uploaded program etc.).

In case of rule violation: If the violation is proven the team will be disqualified from the competition.

4.5.

It is forbidden to touch, grab, toss, move the robot, the game mat, or the game objects.

In case of rule violation: Competition run immediately ends (see point 3.10.). The team can get the points they achieved up till then but not those points that are affected by the violation.



4. Prohibition and Rule Violation



4.7.

The main aim of head judges, judges are to provide an equal and fair competition environment. In case of any rule violation head judges and judges will try to hand out the most relevant and appropriate penalty. In case of violations the final decisions are made by head judges based on the guidelines found in the rules. In some cases, it is possible that, based on evidence and discussions with the competitors, head judges will differ from penalties found in the rules.

Penalties can be:

-  Disqualification from the competition.
-  The competitor will get a 50% reduction from the points they achieved as a final score.
-  Time penalty of 30 or 60 seconds that is added to the team's official competition run time.
-  Point deduction where the competitor will not get the points for a game object or a whole task.



5. Guidelines



5.1.

Registered competitors understand and accept that the main aim of the event is to evaluate and compare intellectual and physical works of the competitors. Organizers believe that participating in this competition alone provides a fun experience and gives opportunities to develop, no matter the outcome. By registering to this competition competitors declare that they will build and program their robot on their own with only guidance from their coach/parent/teacher.

5.2.

Everyone involved in organizing this competition aims at keeping the competition fair, the scoring uniformed and the rules understandable. We encourage all competitors to reach out to us with requests, questions and problems throughout the whole competition using the email addresses on our website.