



ENGINEER CHALLENGE

ROOKIE AGE GROUP

GAME RULES


In Rookie age group we want to make sure that the rules suit the young children and so we have some rules different from the General Rules. In all other aspects General Rules apply to this age group as well.

14th – 17th December 2023





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1. Special rules



1. The robot can function on its own, with remote control via Bluetooth or WiFi, or it can be a combination of the abovementioned two.
2. In accordance with rule 1. teams in Rookie age group does not have to show the Bluetooth/WiFi switched off in the recorded video – as it does not matter for them.
3. Rookie age group teams can use the following sets:
 - LEGO WeDo 2.0
 - LEGO Spike Essential
 - LEGO Mindstorms EV3
 - LEGO Mindstorms Robot Inventor
 - LEGO Spike Prime
 - Arduino
 - Micro:bit
4. Team members are allowed to touch the robot in the “Rockgarden” area (lower right corner of the game field). Team members can touch the robot if any part of the robot touches the “Rockgarden” area (robot does not have to be completely inside the area).

2. Game mat



Below you can see the game mat:



3. Game objects

Important: whenever a game object has to be placed on an area the bordering lines of the area are not considered part of the area. If there is no bordering line then the edge of the color of the area is considered the border.

Plastic bottle cap (any color allowed):

Amount: 3 pieces

Size: diameter 23 - 28 mm

Placement: completely inside the red circles located on river

LEGO minifigure:

Amount: 3 pieces

Size: standard LEGO minifigure size

Placement: completely inside the yellow rectangles

Pencil or pen (any color allowed):

Amount: 3 pieces

Size: standard size approximately 200 mm long x 10 mm diameter

Placement: completely inside the gray rectangles with bigger orange area

„Boxes” built from LEGO bricks:

Amount and color: 2 red boxes, 1 yellow box

Size of 1 box: approximately 5 x 3 cm and 2 bricks height (6 pieces 2x6 bricks)

Placement: 2 red boxes completely inside the area with green border on sun power plant, the yellow one located completely inside the battery located in the middle of the game mat

Ruler:

Amount: 1

Size: 30 cm

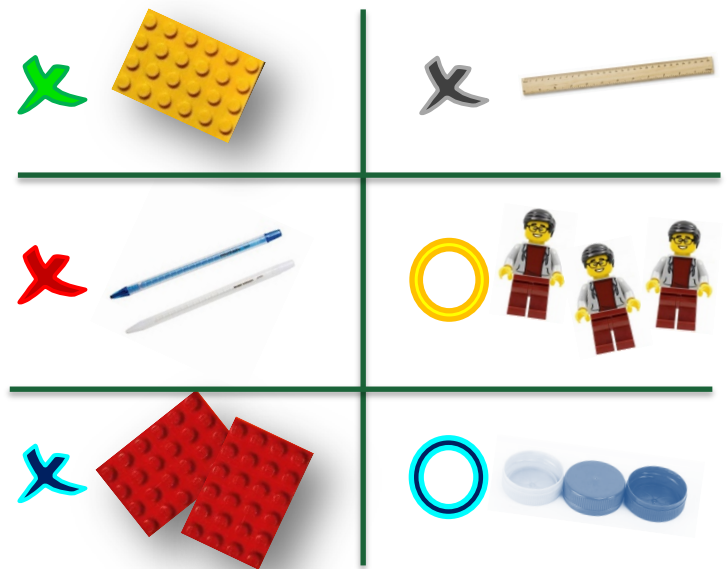
Placement: to show us in the video that the game mat is of the correct size you have to place a ruler on or next to the green rectangle at the bottom of the game field

Before the start of the robot run don't forget about:

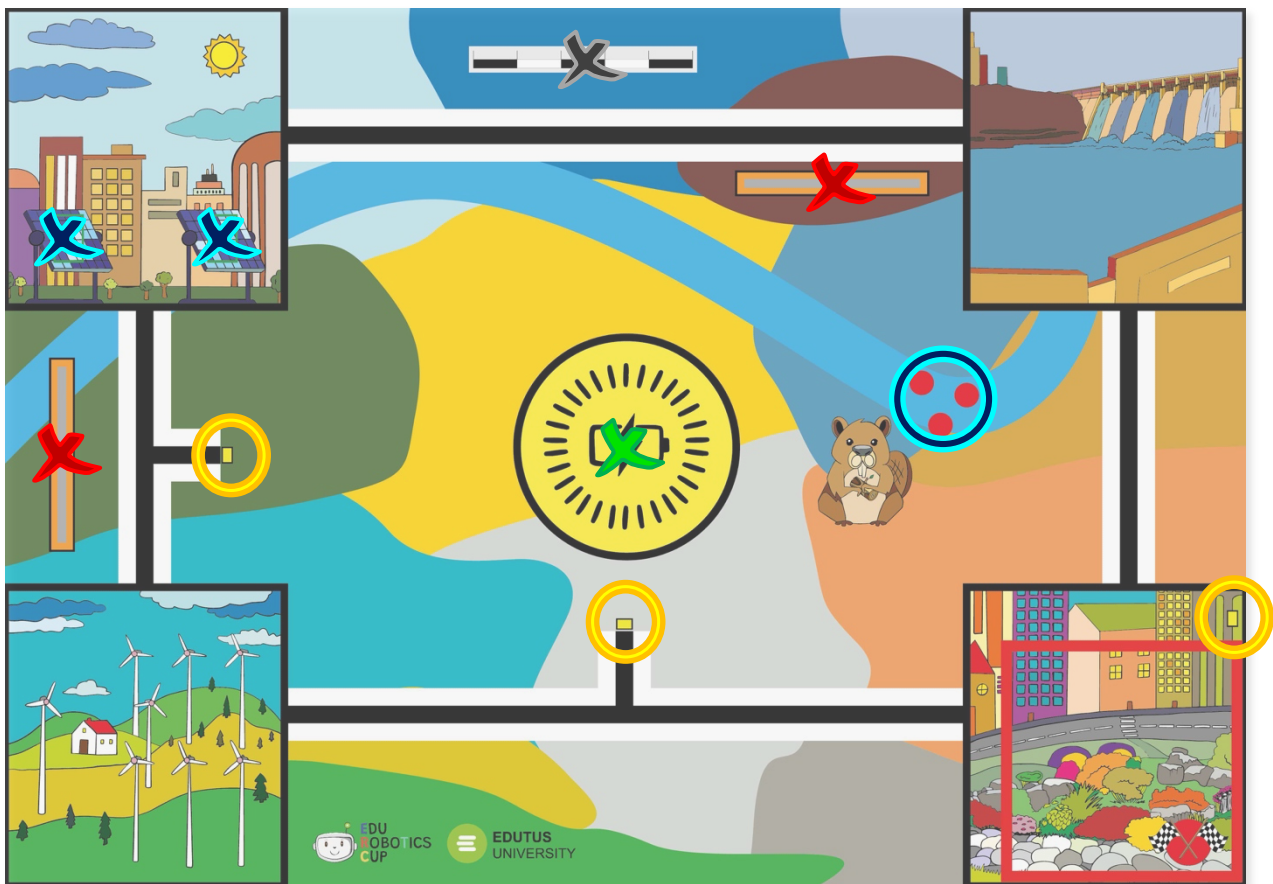
- start recording
- introduce your team
- share with us the name of your sustainable city
- place a ruler next to the black and white area and show it on record, before robot run don't forget to remove it
- **HAVE FUN!**



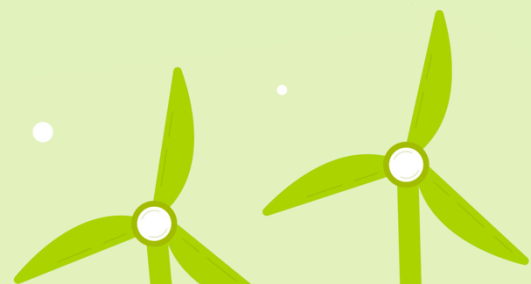
4. Game objects on the mat



See picture below where to place the different game objects:



In case of rule infringement: If a game object is not placed on the game field in the correct position points for that object will not be awarded for the team.



5. Game tasks

The robot has to start from completely inside the square marked with a red line in the bottom corner of the game field.

Support the engineers:

Wind power plant needs the best engineers of the city to fix the broken windmill. **Take** the 3 engineers (LEGO minifigures) from their houses (yellow rectangles) and **support them get to the “Wind Power Plant” area completely inside.**

New solar panels:

We have some brand-new solar panel next to our city, but still covered boxes (red LEGO “boxes”). **Remove the boxes from initial position, at least partly** to turn it on.

The rocks of the Dam:

After an avalanche next to the dam few rocks blocking the river. Help the animals to clean the river! **Remove completely the rocks** (plastic bottle caps) from river. At the same time in new rock garden require more material, so take these **removed rocks** to the **“Rock garden” area completely (“Rock garden” area is bordered by the black line!).**





Charge the battery:

In the **middle of the charging zone**, there is a dead **battery** (yellow LEGO "box"), but this battery is necessary to operate the dam properly. First **carry the uncharged battery** at least partly to the **"Wind Power Plant" area** to charge it and then **the robot provide some signal** (sound/light) about charging is successful. After that **carry the battery** at least partly to the "Dam zone".

Recharge your robot:

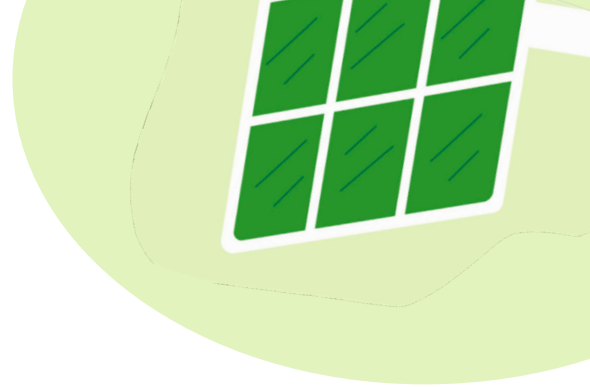
After the long day... some **recharge**, and not just theoretically. Park with your **robot at least partly** to the **charging zone** in the middle of the game map.

Watch out for cables:

We have two **installed cables**, be precise with navigation of your robot. These cables are important for citizens of the City, so **avoid the damage of them**.



6. Scoring



Tasks	Score
Support the Engineers	maximum 30 points
Engineer is <u>completely inside</u> the Wind Power Plant area	10 points / engineer
New solar panels	maximum 30 points
The box <u>is completely removed</u> from initial place (rectangle marked with green line)	15 points / box
The box <u>at least partially removed from the initial place</u> (touching the game mat outside the rectangle marked with green line)	5 points / box
The rocks of the Dam	maximum 45 points
Rock <u>is completely removed</u> from original position <u>and no longer touch any red circle</u>	5 points / rock
Rock <u>is completely inside</u> the base zone	10 points / rock
Charge the battery	maximum 20 points
Battery is <u>charged</u> (touch Wind Power Plant and charging signal) and <u>completely inside</u> the Dam zone	20 points
Battery is <u>charged</u> and <u>touch/outside</u> the Dam zone	10 points
Battery is <u>uncharged</u> and <u>completely inside</u> the Dam zone	15 points
Battery <u>uncharged</u> and <u>touching</u> the Dam zone	5 points
Recharge your robot	maximum 10 points
The Robot is touching charger zone	10 points
Bonus points (applicable if scoring points from base mission)	maximum 10 points
The cable has <u>stayed in place</u> (or moved, but is <u>not sticking out of the orange zone</u>)	5 points / cable
Not allowed touch of the robot	
The participant touches the robot, when its completely outside of the base	- 5 points
Total score:	145 points

Definitions for scoring

Completely inside: every part of the game object that touches the game field only touches the target area not including the surrounding line.

Touching: the game object touches the target area not including the surrounding line. Important that in this case the game object is not completely inside the area, because that is a different case.

