

EDU ROBOTICS CUP

organized by  EDUTUS
UNIVERSITY



2025

Engineer Challenge

KIDS GAME RULES

EDU ROBOTICS CUP
2024-2025

Engineer Challenge - Kids Rulebook

... the start of our space journey

Everyone has a dream about being an astronaut, travelling to infinity and beyond! Just like everything, it starts with one small step that can become one giant leap into the future...

1. Game Mat

Below you can see the game mat:



2. Game Objects on the Game Field

See picture below where to place the different game objects:



3. Game Objects

3.1. LEGO 2x2 pieces (Zero-Gravity Object)

Amount: 5 x red, 5 x white

Placement: Place the 2x2 bricks on the black line: the red bricks go where you see a red circle with the number '1' in the picture and the white bricks go where you see a yellow circle with the number '1'. You will not find these circles on the game field, just make sure they are as precisely placed as possible.

Note: If you don't find red or white 2x2 bricks, you can change one color to anything else as long as it is clearly visible on your video.

3.2. 4x4 LEGO panel or brick assembly (Solar Panel)

Size: maximum 1 LEGO block height

Placement: Place the solar panel on top of the Edutus logo on the university building marked with the number '2' in the picture.

3.3. Matchbox bottom pieces and PET bottle caps with hooks

Amount: 2

Placement: Put the PET bottle caps with hooks into the match boxes. This assembly should be placed in the following areas:

- square above the cows (bottom right, area marked with the number 3a),
- square at the lighthouse (top left, area marked with the number 3b).



Note: In case your country doesn't have such caps, you are allowed to craft a similar hook on a PET bottle cap yourself.

3.4. Mug and Minifig

Amount: 1

Any mug you find at home is perfect that you usually drink your tea or cocoa from.

Minimum height: 5 cm

Placement: Place a mug on the mountain area in the center marked with the number '5'. Put a LEGO minifig completely inside the mug.

3.5. Empty toilet paper tube

Amount: 1

Placement: Place a toilet paper tube on the spacecraft (top-right) marked with the number '4'.

4.6 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 the scale graphic bottom-right of the game field.

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.

4. Game Tasks

The robot has to start from completely inside the upper city area in the upper left part of the game field.

4.1. Zero-Gravity Object Retrieval

Objective: The robot must navigate a course with various floating objects and retrieve a specific object. Robot needs to retrieve and move specific ones to their designated destination.

Goal:

- Collect yellow samples and move them to one of the left corners 5*5 points
- Collect red samples and move them to one of the right corners 5*5 points

Definition of corner: anywhere from that quarter outside of the black line.
Use either the top or bottom corner.

4.2. Spacewalk Repair Simulation

Objective: The robot must repair a damaged solar panel on the International Space Station (ISS).

Bring the spare solar panel to the rocket logo..

Solar panel is a 4x4 LEGO panel or brick assembly.



Goal: Move the solar panel to the rocket logo on the space center in the top right part of the field, points are awarded if it at least touches the logo 20 points

4.3. Planetary Sample Collection Simulation

Objective: The robot must collect soil samples from a simulated alien planet.

Your task is to pull the PET bottle caps from the match-boxes.

Goal:

- Match box should still touch the starting area 2*5 points
- Soil samples are completely removed and not touching the box 2*10 points
- Soil samples are on the robot at the end of the game 2*10 points

4.4. Emergency Evacuation

Objective: The robot must evacuate an astronaut from a malfunctioning module (mug) and help the astronaut escape to his/her family.

Goal:

- Remove the astronaut from the defective module 10 points
- Move the astronaut out from the field 20 points

4.5. Space Station Docking

Objective: The robot must dock a spacecraft to the ISS.

Goal:

- The tube is still touching the spacecraft 5 points
- Robot at the end is touching the toilet paper tube 15 points

5. Scoring

Tasks	Per piece	Score
Zero-Gravity Object Retrieval		
White blocks are in one of the left corners	5	25
Red blocks are in one of the right corners	5	25
Spacewalk Repair Simulation		
Solar panel is touching the rocket logo	20	20
Planetary Sample Collection Simulation		
Matchbox is still touch the starting area	5	10
Soil sample is completely removed and is not touching the box	10	20
Soil sample is on the robot at the end of the game and is not touching anything else.	10	20
Emergency Evacuation		
Astronaut is not touching the defective module	10	10
Astronaut is completely removed from the field	20	20
Space Station Docking		
The tube is still touching the spacecraft	5	5
Robot at the end is touching at a toilet paper tube	15	15
Technical points		
Recorded and uploaded video includes all requested parts: <ul style="list-style-type: none">● robot,● game field and game objects,● robot run,● end position of robot and game objects.	10	10
The team uploaded only one video file and one program documentation, which apply to the requested format and naming format.	5	5
Total score		185

6. 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.