



## KIDS Game Rules Season 2024

*Unofficial WRO themed game for students 6 to 10 years old  
for use at The ORC in Brescia September 25 - 28 2024*



## **Animal Rescue Squad UPDATE for OPEN Championship Italy**

**We are very happy that your teams are participating in the KIDS Challenge, the first step into the world of competitions. For this reason, we thought of proposing some variations to prepare them for future challenges.**

- PARKING AREA is **NOT** a Starting Area! It is not permitted to move or touch the robot inside the PARKING AREA.
- Only SAFE AREAS can be used as Starting Areas and ONLY in SAFE AREAS it is allowed to touch/move the robot.
- Surprise Rule: announced on the 1st September (1. Surprise rule) and on the 28th September (2. Surprise rule) at the venue
- Interview: Teams will have the chance to present their robots and programming

INTERVIEW: On 27th September afternoon the teams are interviewed by the judges to assess the team's cooperation, as well as examine how well all team members understand the construction process, the program and the strategy used during the round. The table below is used to rate the team. The score, which will be added to the results of the two days.



<b>Cooperation – team work</b>			
Roles are clearly visible and the team members can talk about how they have collaborated in the process.	<b>3</b>	<b>6</b>	<b>10</b>
<b>Building the robot:</b>			
Do the team members understand the components used to build the robot and why each component has been chosen?	<b>3</b>	<b>6</b>	<b>10</b>
<b>Programming:</b>			
How well do the team members understand the program and the connection between the program's components and the robot's driving on the track?	<b>3</b>	<b>6</b>	<b>10</b>
<b>Strategy:</b>			
How well do the team members understand the strategy chosen to score points on the playing field?	<b>3</b>	<b>6</b>	<b>10</b>
The interview clearly shows that <b>the team build and programmed the robot themselves.</b>	<b>3</b>	<b>6</b>	<b>10</b>

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# 1. Introduction

In the past 100 years the earth's population has increased from around 2 billion people to around 8 billion people. As a result of this many more people need food, clothes, fun activities and other things we need in our daily life.

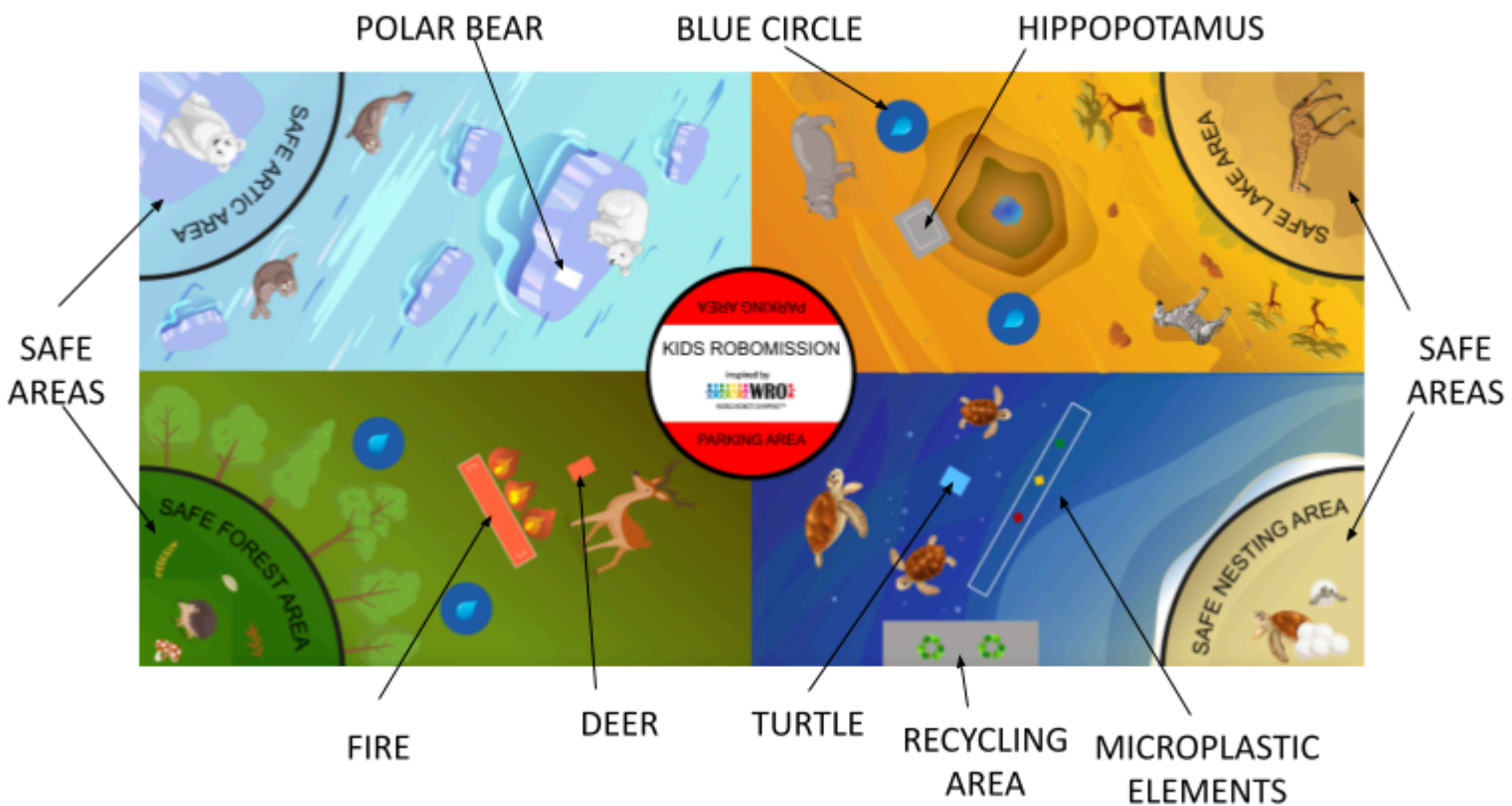
We have now come to realize that the way we have produced food and other goods and our lifestyle in general - is harming the environment, nature and the animals living on the planet. We want you to develop a robot that can help us clean up the mess we have made and rescue the animals.

# 2. Game Field

The following graphic shows the game field with the different areas.

If the table is larger than the game mat, use the NESTING SAFE AREA in the lower right corner as a guide and then place the FOREST SAFE AREA at the edges of the corner walls to set up the game mat.

**For more information about the table and game mat specifications, please take a look at WRO RoboMission Category General Rules.**



### 3. Game Objects and Positioning

- 1 polar bear placed on the sea ice
- 4 water elements: 2 placed in the SAFE LAKE AREA and 2 placed in the SAFE FOREST AREA
- 1 hippopotamus placed in the pond
- 1 deer placed in the burning forest
- 1 fire placed in the fire area in front of the deer
- 4 microplastic elements placed in the grey area in the ocean in front of the turtle
- 1 turtle placed **in the ocean** in the ocean

### 4. Robot Missions

For greater clarity, the missions will be explained in multiple sections. The team can decide which parts of the missions they will do and in which order. **Final scoring will be based on the situation on the field at the end of the run. So if a water element was correctly placed in one of the blue circles in front of the fire but is accidentally moved out of the blue circle later and then not in the blue circle by the end of the game, no points are given for this task**

#### 1. Help the polar bear back to the arctic mainland

Near the poles the ice is melting, and the polar bear has difficulties finding food. The polar bear has gone far from home in search of food, and now it has stranded on a small sea ice fragment. Save the polar bear and help it back to the mainland again.

The polar bear on the sea ice has to be moved to the SAFE ARCTIC AREA. Points are only given if the polar bear is **completely** in the SAFE ARCTIC AREA and is not damaged. The line belongs to the SAFE ARCTIC AREA.

#### 2. Bring water to the hippopotamus

In other parts of the world there is a drought because of climate change. The hippopotamus cannot live without ponds with loads of water. Due to the drought the ponds have dried out and the hippopotamus is suffering. Rescue the hippopotamus by filling the pond with water.

The water elements (2) have to be placed **inside** the SAFE LAKE AREA at the start, but the team decides the initial position of the water elements.

The water elements have to be moved to the blue circles (2) in the pond. Only one water element in each blue circle counts. Points are only given if the water elements are not damaged.

The hippopotamus must not be moved or damaged.

### 3. Extinguish the fire, and rescue the deer from the forest fire

In some parts of the planet there are forest fires which are a huge threat to animals and humans. Help the deer in the forest by extinguishing the fire and bring the deer to the SAFE FOREST AREA.

The water elements (2) have to be placed **inside** the SAFE FOREST AREA at the start, but the team decides the initial position of the water elements.

The water elements have to be moved to the blue circles in front of the fire. Only one water element in each blue circle counts. Points are only given, if the water elements are not damaged.

Once both the water elements have been placed **completely** inside the blue circles, the fire element can be removed from the field manually.

Now the deer has to be saved by moving it from the fire area to the SAFE FOREST AREA. Points are only given if the deer is not damaged.

### 4. Clean up the microplastic from the ocean and save the turtle

Until now we humans have dumped lots of garbage and especially plastic in nature. Plastic does not deteriorate fast but stays in nature for around 500 years. Plastic piles up in the ocean and is a huge threat to the turtle. If the turtle eats the plastic it will die, as it cannot digest the plastic. Help the turtle by cleaning up microplastics from the ocean and bring the turtle to the SAFE NESTING AREA.

The microplastic elements (4) must be moved to the recycling area. Points are given for each microplastic element, that is inside or touching the RECYCLING AREA and not damaged. The line belongs to the area

Now the turtle has to be saved by moving it to the SAFE NESTING AREA – the line belongs to the area. Points are only given if the turtle is not damaged, **and at least one** of the microplastic elements is **completely inside** the RECYCLING AREA.

### 5. Park the robot

Try to park your robot in the central round PARKING AREA. Points are given if the robot stops there, and its projection is completely (top-view) within the Parking Area – **the line belongs to the area**. (cables are allowed to be outside of the area) - (This points will be given only if at least one of the other points are assigned).

### 6. Get bonus points and avoid penalties

BONUS POINTS are given if the hippopotamus is not moved or damaged (only if at least one of the other points are assigned).

PENALTIES (will be subtracted from the score unless the score becomes negative):

- If a team illegally touches the robot or a game object a penalty of 1 point is subtracted from the total score
- If microplastic elements (1 or more) are touching or inside the SAFE NESTING AREA a penalty of 5 point for each element is subtracted from the total score

## 5. Specific Game Rules & General Rules

For the KIDS Game, the normal WRO RoboMission General Rules apply, but there are some specific rules just for this age group. These specific rules are replacing similar articles in the General Rules and are mentioned here:

### Specific rules about material

1. The controller, motors and sensors used to assemble the robot must be from the LEGO Education WeDo 2.0 Core Set or LEGO Education SPIKE Essential. Exception: any LEGO Smart Hub is accepted, **allowing the use of only 2 ports**. Any number and combination of motors and sensors are allowed, while only one controller (Smarthub) can be used. Only LEGO branded non-electrical / non-digital elements can be used in the construction of the robot.
2. The maximum dimensions of the robot before it starts must be within 250mm×250mm×250mm. After the robot starts, the dimensions of the robot are not restricted.

### Specific rules about the game

3. ***The robot must start from within one of the SAFE CORNER AREAS inside the black lines. It cannot start from the .***
4. During the attempt, the robot must be moved/operated under programmed control autonomously. The robot can be controlled by any compatible device using Graphical Programming Languages.
5. ***During an attempt, the team is allowed to touch/grab the robot when any part of the robot, e.g. a wheel, touches a SAFE CORNER AREA. The is NOT a safe area***
6. During an attempt, the team is also allowed to move a robot from one SAFE CORNER AREA to another SAFE CORNER AREA. It is only allowed to move the robot, not the game objects.
7. Teams are not allowed to add or remove parts and change the structure of the robot during an attempt.
8. During an attempt, members of the team are:
  - *Not allowed to touch any game object outside of the SAFE CORNER AREAS.* If a team touches a game object outside a safe corner area, the judge will place the touched item at the location on the field where it was located, when the team touched the item, and, in the position it was, when touched.
  - *Not allowed to touch the robot unless the robot is touching a SAFE CORNER AREA.* If a team touches a robot, which is not touching a SAFE CORNER AREA, a penalty of 1 point is subtracted from the score.
  - If a team illegally touches the robot or a game object, a penalty of 1 point is subtracted from the score unless the score becomes negative.

9. The mission is completed when either:
  - The robot moves to the central round PARKING AREA, stops, the projection of the robot is completely within the Area (cables are allowed to be outside of the area) and the team communicates to the judge that the robot has finished.
  - A team member shouts “STOP” and the robot does not move anymore.
  - The 2-minute time limit has expired.
10. Teams can bring the robot assembled to the competition. They do not need to re-build the robot on the competition day.



## 6. Scoring

Definitions for the scoring

Tasks	Each	Max.
<b>Help the polar bear back to the arctic mainland</b>		
Polar bear is completely in the SAFE ARCTIC AREA and is not damaged.	10	10
<b>Bring water to the hippopotamus</b>		
Water elements are completely in the blue circle in the ponds, and not damaged.	10	20
Water elements are partially in the blue circle in the ponds, and not damaged.	5	
<b>Extinguish the fire, and rescue the deer from the forest fire</b>		
The water elements are completely in the blue circle in front of the fire, and not damaged.	10	20
The water elements are partially in the blue circle in front of the fire, and not damaged.	5	
Remove the fire element from the field manually, when the fire is extinguished (ONLY if both water elements are completely in the blue circles at the end of the attempt)	5	5
The deer is completely inside the SAFE FOREST AREA and not damaged.	15	15
The deer is partially inside the SAFE FOREST AREA and not damaged.	8	
<b>Clean up the microplastics from the ocean and save the turtle</b>		
The microplastic elements are completely inside the RECYCLING AREA	5	20
The turtle is completely inside the SAFE NESTING AREA, it is not damaged, and <b>at least one of the microplastic elements is completely inside</b> the RECYCLING AREA.	15	15
The turtle is partially inside the SAFE NESTING AREA, it is not damaged, and <b>at least one of the microplastic elements is completely inside</b> the RECYCLING AREA.	8	
<b>Get bonus points (Only given if other points are assigned) and avoid penalties</b>		
The hippopotamus is not moved or damaged.	10	10
If a team illegally touches the robot or a game object, a penalty of 1 point is subtracted from the score unless the score becomes negative.	-1	
If microplastic elements is touching or inside the SAFE NESTING AREA (each)	-5	-20
<b>Park the robot (Only given if other points are assigned)</b>		
The projection of the robot is completely(top-view) within the Parking Area.		10
<b>SURPRISE RULE</b>	40	
Max points	40	
<b>Maximum Score</b>		<b>165</b>

### Scoring Sheet

Team name: \_\_\_\_\_ Round: \_\_\_\_

Tasks	Each	Max.
<b>Help the polar bear back to the arctic mainland</b>		
Polar bear is completely in the SAFE ARCTIC AREA and is not damaged.	10	
<b>Bring water to the hippopotamus</b>		
Water elements are completely in the blue circle in the ponds, and not damaged.	10	
Water elements are partially in the blue circle in the ponds, and not damaged.	5	
<b>Extinguish the fire, and rescue the deer from the forest fire</b>		
The water elements are completely in the blue circle in front of the fire, and not damaged.	10	
The water elements are partially in the blue circle in front of the fire, and not damaged.	5	
Remove the fire element from the field manually, when the fire is extinguished (ONLY if both water elements are completely in the blue circles at the end of the attempt)	5	
The deer is completely inside the SAFE FOREST AREA and not damaged.	15	
The deer is partially inside the SAFE FOREST AREA and not damaged.	8	
<b>Clean up the microplastics from the ocean and save the turtle</b>		
The microplastic elements are completely inside the RECYCLING AREA	5	
The turtle is completely inside the SAFE NESTING AREA, it is not damaged, and <b>at least one of the microplastic elements is completely inside</b> the RECYCLING AREA.	15	
The turtle is partially inside the SAFE NESTING AREA, it is not damaged, and <b>at least one of the microplastic elements is completely inside</b> the RECYCLING AREA.	8	
<b>Get bonus points</b> (Only given if other points are assigned) <b>and avoid penalties</b>		
The hippopotamus is not moved or damaged.	10	
If a team illegally touches the robot or a game object, a penalty of 1 point is subtracted from the score unless the score becomes negative.	-1	
If microplastic elements is touching or inside the SAFE NESTING AREA (each)	-5	
<b>Park the robot</b> (Only given if other points are assigned)		
The projection of the robot is completely(top-view) within the Parking Area.	10	
<b>SURPRISE RULE</b>		
Max points	40	
<b>FINAL SCORE</b>		
<b>TIME (in seconds)</b>	sec	