GLOBAL ROBOTICS CHALLENGE

RULE BOOK 2026

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RAMP RUSH

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1. Technical Introduction:

Ocean pollution caused by plastic waste and discarded materials poses a serious threat to marine life and ecosystems.
This challenge combines mechanical creativity with environmental awareness by simulating a water rescue operation in a dry environment that realistically represents a polluted aquatic zone without using real water.
Teams are required to design a robot capable of performing multiple tasks including:

- **Climbing a ramp at a 30° angle, testing the robot's thrust, balance, and mechanical stability.**
- **Reaching the simulated polluted water zone, filled with various types of waste (plastic – metal – paper).**
- **Collecting and sorting the waste using innovative mechanical mechanisms such as arms, claws, or conveyor systems.**
- **Returning the waste to the designated recycling zone, ensuring each type is placed in its correct area.**

This challenge not only evaluates the teams' ability to simulate solving a global environmental issue, but also tests them in real-world mechanical engineering, structural design, and innovation in movement and object-grabbing mechanisms.

2. Team Composition:

- **Team Members: 2 to 4 Students, guided by a Coach.**
- **Age Categories:**
  - ❖ **Junior Category: Ages 7–12.**
    Allowed robots: EV3, Spike Prime, LEGO NXT.
  - ❖ **Senior Category: Ages 13–17.**
    Allowed robots: VEX or any type of robots (NON-LEGO).
  - ❖ **Adult Category: Ages 18 and above.**
    Allowed robots: VEX or any type of robots (NON-LEGO).

3. Playing Field :

❖ Specifications & Dimensions:

1. **Arena Dimensions** (250cm x 150cm).
2. **Starting Area** (25cm x 25cm white square):
   - This is where the robots will begin their journey.
3. **Ramp Area** (120cm x 50cm):
   - A ramp with a 30-degree incline that robots must cross to reach the polluted water area. This adds an extra challenge for navigation.
4. **Polluted Water zone** (65cm x 150cm):
   - This section will simulate a polluted water body. Use baby blue banner to represent water and scatter small waste pieces (plastic, paper, metal) to simulate pollution.
5. **Recycling Zone** (65cm x 150cm):
   - This is where the robots will deposit the collected waste. There are marked areas representing various types of waste (plastic (Red), paper (Blue), metal (Green)) each of them will be 30cm x 30cm.
6. **Ramp Safety**:
   - A safety net will be positioned beneath the ramp to protect the robot in case of a fall. If the robot falls off the ramp, it must be relaunched from the starting position, and the collected waste within the robot at the time of the fall will be forfeited.
7. **Waste Items**:
   - 6 waste objects 2 of each (small plastic bottles, metal cans, paper cups) representing pollution.
8. **Material & Surface**:
   - The flat areas will be made from banner material, while the ramp will be built from wood for strength and traction

4. Robot Specifications:

- **Dimensions**: The robot must not exceed (**25 cm × 25 cm**) (height is not restricted).
- **Weight**: Maximum weight (**2 kg**).
- **Type of robot**: Can be built using LEGO or NON-LEGO or VEX.
- **Control method**: Manual control via remote control (any type of controller is allowed).

5. Game Details :

- **Match time**: 5 minutes per team.
- **Mission**:
  - The robot starts from the white starting square.
  - The robot climbs the ramp at a 30° angle to reach the polluted water zone.
  - The robot enters the polluted water zone which contains various wastes.
  - The robot collects as many wastes as possible using its mechanical mechanisms.
  - The robot crosses back over the ramp to return to the Recycling Zone.
  - The robot places the wastes in the designated recycling squares.
  - Any waste is counted only if placed inside its correct designated square.
  - If the robot falls off the ramp, it is returned to the starting area and any waste it was carrying at the fall is cancelled (not counted).
  - Wastes dropped outside the area are not counted.
- **Control**: Remote only; no manual intervention.

6. Scoring System:

Waste Type	Metal Can	Paper Cup	Plastic Bottle
Image			
Points	2 pts	3 pts	5 pts

- ❖ **Time: The time taken to complete the mission is recorded; the faster time gives the team an advantage in winning.**
- ❖ **Collected waste: The number of waste pieces the robot successfully collected and returned to the Recycling Zone.**
- ❖ **Tie-breaker: If final scores are tied between two or more teams, the team that completed the mission in less time is declared the winner.**

7. Judging Criteria:

- ❖ **Speed: Time required to complete the mission.**
- ❖ **Wastes: Number of items successfully collected.**
- ❖ **Robot design: Creativity and efficiency of the design for navigation and waste collection.**

8. Penalties:

- ❖ **If a team member touches the robot while it is operating inside the field, a time penalty of 5 seconds is applied — during this penalty the robot is stopped; after the penalty time ends, play resumes.**
- ❖ **Disqualification: Violating size/weight limits or damaging the playing field will result in team disqualification.**

9. Safety and Sportsmanship:

- ❖ **All robots must be safe and free of sharp parts.**
- ❖ **Ensure the robot's safety and stability during operation.**
- ❖ **All teams must show respect and sportsmanship; any aggressive or unfair behavior may lead to penalty or disqualification.**

10. Notes:

To download the playground ready for printing click this link:

https://drive.google.com/drive/folders/1AVgkTYsisSLfkFITkhCkkZpljgW6cgk1?usp=sharing

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Good Luck.