Explorer General Rules
In-House

2023

WORLD ROBOT OLYMPIAD ™

SOUTH AFRICA

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Table of Contents

Introduction

Robotics is a wonderful platform for learning 21st century skills. Solving robotic challenges encourages innovation and develops creativity and problem-solving skills in students. Because robotics crosses multiple curricular subjects, students must learn and apply their knowledge of science, technology, engineering, math, and computer programming.

The most rewarding part of designing robots is that students have fun. They work together as a team, discovering their own solutions. Coaches guide them along the way, then step back to allow them their own victories and losses. Students thrive in this supportive and immersive environment, and learning occurs as naturally as breathing air.

At the end of the day, at the end of a fair competition, students can say they did their best, they learned, and they had fun.

There is no international component for the Explorer competition.
The Explorer In-House competition is run by coaches in their own capacity.
The competition takes place between the 11th and 20th of October.

Explorer In-House – Purpose

The purpose of the In-House challenge is to make robotics accessible to as many young roboticists as possible. For this reason it is run by the coaches in their own environments during the challenge week. The primary goal is to challenge young roboticists to do their best and score what they are happy with and to plant and nurture a passion for robotics.

To assist in achieving this goal if coaches feel the challenges are too difficult for their teams, they may simplify the challenge and still submit their teams scores to the WRO SA system to receive achievement certificates.

The In-House challenge is not about winning, it is about challenging yourself to do the best that you can and to leave the challenge with a smile.

Explorer In-House – Specific Information

1.1 Explorer Description

- "EXPLORER" is based on the WRO Robo Mission Elementary table challenge with simplified tasks and a platform for multiple attempts to keep improving your score.

- Explorer competitions will run for 2.5 hours at provincial competitions.

- This challenge caters for beginners who would also like to participate in robotics challenges but are not yet ready for WRO.

- Explorer challenge is run on the Robo Mission Elementary PVC roll up printed mats. Official mats can be bought through Hands on Technologies the LEGO Education provider for Southern Africa.

- Both age groups, Explorer Lite 8-12 years old and Explorer Prime 11-16 years old will participate on the same mat but the level of difficulty for Explorer Prime will increase (see Explorer Prime rules).

- There is no Explorer challenge for the 17 –19 years age group.

- Team members may participate as many times as they like in the Explorer In-House competition.

1.2   Explorer Rules

- Teams may have 2-3 members. A team member is not allowed to participate by themselves.

- Coaches must have registered their school with WRO SA before competing in the challenge week.

Explorer Category General Rules

1. Surprise Rule

1.1. A surprise additional rule may be sent out one (1) week before the competition week for the In-House explorer event.

2. Material

2.1 The Explorer In-House competition is open to any robotics platform from LEGO Spike to Micro:bit to Bee-Bots. Any device may be used to participate in the challenge.

2.2 Coaches are not allowed to enter the court to provide any instructions and guidance during the competition.

2.3 Teams are not allowed to bring with them any pre-made programs or programming instructions. Teams must program their robot during the Explorer Competition from a blank programming page.

2.4 Teams are not allowed to share a laptop and / or the program for a robot on the competition day.

2.5 Teams need to run their robots to test and score on their allocated competition table only.

3. Regulations about the robot

3.0 **NEW!!** Teams can <u>arrive with a prebuilt (complete) robot ready to commence</u> with programming when the "START" is announced

3.1. The maximum dimensions of the robot before it starts the "mission" must be within 250mm × 250mm, the dimensions of the starting square on the competition mat. After the robot starts, the dimensions of the robot are not restricted.

3.2. The controller must be placed in the robot in a way that makes it easy to check the program and stop the robot by a Judge.

3.3. The robot is restricted to the following number of Sensors and Motors.
- **1 x Touch/Force Sensor**
- **1 x Colour/Light Sensor**
- **1 x Ultrasonic Sensor**
- **1 x Gyro Sensor**
- **4 x motors (2 x driving motors, 2 x extra medium/large motor)**

3.4. It is not allowed for the teams to perform any actions or movements to interfere or assist the robot after the actions to start the robot is performed. Teams that violate this rule will get a score of 0 <u>in this particular run</u>.

3.5. A robot must be autonomous and finish the "missions" by itself. Any radio communication, remote control and wired control systems are not allowed while the robot is running. Teams in violation of this rule will be disqualified and must quit the competition immediately.

3.6. The robot can leave on the field any parts of the robot that are not containing main units (controller, motors, sensors) if needed. As soon as the part is touching the field or its game element and does not touch the robot it is considered as a free element not being part of the robot.

3.7. The Bluetooth function **is allowed to be used by teams using tablets/iPads**, the program must still be downloaded to the robot and started manually by teams. Tablets/iPads/computers <u>must remain in the team's preparation area</u> and may not be brought to the competition table.

4. Table and game mat specifications

4.1. The dimensions of a WRO mat in an age group are 2362 mm x 1143 mm.

4.2. The internal dimensions or a game table should be 2362 mm x 1143 mm (like the game mat) or max. + / - 5mm in each dimension.

4.3. The height of the borders is 70 +- 20mm.

4.4. All black lines are at least 20mm.

4.5. The game mat is printed on PVC roll up material.

4.6. The Explorer Category uses the Elementary Robo Mission game mat.

5. Prior to competing

5.1. Teams can <u>arrive with their prebuilt robot ready</u> to commence programming when "Start" is announced.

5.2. Teams will not be able to score if their robot does not completely fit into the 250mm x 250mm start block.

5.3. Remove all EXPLORER programmes from the laptop/tablet and brick used before. The challenge is about programming on the day.

6. Competition

6.1. The competition format follows a continuous scoring method with teams able to register a score at any point within the competition by **notifying the judge** when they are attempting a scoring run. Teams must have recorded one scoring run with their table judge within the first hour of the competition and then again with every consecutive hour.

6.2. Competitors are not allowed to programme outside of specified competition times

6.3. Once "Start" is announced competitors can immediately start the programming and test runs.

6.4. **If teams want to make test runs, they need to queue with their robots in hand. No laptops/tablets/iPads should be brought to the competition table and should remain at the seating area.**

6.5.1 **NEW!!** The maximum amount of time a robot is allowed to run for is 3 minutes.

6.5.2 There is no limit on the number of test runs within the allocated time.

6.5.3 The scoresheet allows for 4 official registered scores.

6.6. The robot must be placed in the starting area so the <u>projection of the robot on the game mat is completely within the start area</u>. The participants are allowed to make physical adjustments to the robot in the starting area.

6.7. Once physical adjustments have been made to the satisfaction of the participants, the judge will give the signal for the SPIKE / EV3 / NXT program to be selected. The judge will give a countdown "3,2,1, GO" on the word "GO" the robot program must be run.

6.8. If there is any uncertainty during the task, the judge makes the final decision. They will bias their decision in the team's favour.

6.9. If a team starts the run early by accident (without any tactical reasons, e.g. because of a nervous situation), the judge can decide that the team can start the run again.

6.10. The attempt and time will end if:
- a. Any team member touches the robot or any mission objects on the table during the run.
- b. The robot has completely left the game table.
- c. Violation of the rules and regulations.
- d. A team member shouts "STOP" and the robot does not move anymore. The robot program must be stopped immediately, and the robot left in the position it stopped on the table.

6.11 The score calculation is done by the judges at the conclusion of each scoring run.

6.12 Ranking **(physical events only)** of a team is based on two factors first the highest score out of all attempts and second by the time (of day) this score was registered. For example, if team A scored 200 points in the first 40 minutes of the competition and team B scores 200 points in the first 30 minutes of the competition team B will be ranked first.

7. Team area

7.1. Teams must work on and program their robot in an area designated by tournament officials (each team has its own area). People, other than competing students are not allowed to enter the competition area, apart from authorized WRO Organizing Committee staff and special personnel.

7.2. The standard of all competition materials and courts are according to what are provided by the committee on the competition days.

8. Prohibited matters

8.1. Destruction of competition courts/tables, materials or robots of other teams.

8.2. Use of dangerous items or behaviours that may create or cause interference with the competition.

8.3. Inappropriate words and/or behaviour toward other team members, other teams, audience, judges or staff.

8.4. Bringing a cellular/mobile phone or a medium of wire/wireless communication into the designated competition area.

8.5. Bringing food or drink into the designated competition area.

8.6. Competitors using any communication devices and methods while the competition is in process. Anyone outside the competition area is also banned from talking to or communicating with competing students. Teams violating this rule may be penalised. If communication is necessary, the committee may allow team members to communicate with others under supervision by tournament staff or by exchanging a note under permission by judges.

8.7. Any other situation which judges might consider as interference or violation of the spirit of the competition.

9. Fairness

9.1 All teams should be given the same challenge layout and randomization.

9.2 All teams should be treated fairly and no team should be prioritised above another.

9.3 All teams should have the same amount of time to participate, practice and score.

9.4 If a challenge is simplified it must be simplified for all teams.

9.5 All teams must be scored in the same manner when the robot has finished moving and without any bias.