WRO®

SOUTH AFRICA

Inhouse Explorer

2022

Inhouse Explorer General Rules

UPDATED!

Official Game Rules for the WRO SA Explorer Competition: 25th March 2022

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 or National component for the Inhouse Explorer competition.

Inhouse Explorer – Specific Information

1. **NEW!!** Inhouse event – between the 24th and 30th of October 2022 coaches run their own inhouse 2-3 hour Explorer competition following the Explorer rules, where teams reprogram the robot to complete the Explorer challenge and upload their scores to the WRO SA website.
2. **NEW!!** Teams can use any robotic devices to complete the challenge and are no longer limited to LEGO Robots for the Inhouse competition.
3. **NEW!!** The Inhouse Explorer competition is open to teams outside of South Africa.

1.1 Inhouse 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.
- Between the 24th and 30th of October coaches must run their own internal competitions for their teams and record the teams highest achieved score.
- The score must be submitted through the WRO SA website in order for teams to receive certificates and appear on the ranking list with their school name.
- Explorer challenge is run on the Robo Mission Elementary PVC roll up printed mats.
- Both age groups, Explorer Lite 8-12 years old and Explorer Prime 11-15 years old will participate on the same mat but the level of difficulty for Explorer Prime will increase (see Explorer Prime rules).
- Schools/Clubs competing in the Inhouse Explorer Competition must register their schools/clubs before the closing date of registration 30th September 2022 in order to submit their teams to the WRO SA scoring system.
- There is no Explorer challenge for the 16 –19 years age group.

1.2 Explorer Rules

- Teams may have 2-3 members.

- Participants are only allowed to compete in the Explorer Categories Explorer Lite and Explorer Prime once per age group at WRO SA Provincial and National level.

** A participant may participate in Explorer Prime once after having done Explorer Lite, the previous year. They then need to move onto WRO Robo Mission or Future Innovators.

Explorer Category General Rules

1. Surprise Rule

1.1. A surprise additional rule may be announced on the day of the competition or for the week of the online explorer event.

2. Material

2.1 NEW!! Any robotic device is allowed to be used in the Inhouse competition category.
2.2 Teams should have all equipment available to them at the inhouse venue.
2.3 Teams should bring enough spare parts. Even in the case of any accidents or equipment malfunction.
2.4 Coaches are not allowed to assist teams with programming during the competition time.
2.5 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.
2.6 Teams are not allowed to share a laptop and / or the program for a robot on the competition day.
2.7 Teams need to run their robots to test and score on their allocated competition table only.
2.8 Only the highest score achieved is recorded and can be submitted to the WRO SA website (www.wrosa.co.za) during the competition time 24th-30th October 2022.

3. Regulations about the robot

3.0 **NEW!!** Teams can arrive with a prebuilt (complete) robot ready to commence 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 in this particular run.

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 LEGO element not being part of the robot.

3.7. The Bluetooth function is allowed to be used by teams in the Inhouse competition.

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.

5. Prior to competing

5.1. Teams can arrive with their prebuilt robot ready 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 4 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 projection of the robot on the game mat is completely within the start area. 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 robotics 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.

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 and judges are not allowed to enter the competition area.

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. If any of the rules mentioned in this document are broken or violated, the judges can decide on one or more of the following consequences:

a. A team may be given a time penalty of max. 15 minutes. In this time, teams are not allowed to do any changes on their robot and program.

b. A team may get up to a 50% reduced score in one or more runs.

c. A team may not qualify for the national final.

d. A team may be disqualified completely from the competition.