GLOBAL ROBOTICS CHALLENGE

RULE BOOK 2026

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LINE RACERS

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1. Technical Introduction:

The Line Racers provides a practical platform to challenge autonomous robots, where they must follow a black line on a white track at the highest possible speed while maintaining maximum accuracy to reach the finish line before the opposing team.

Performance in this competition depends on the integration of precise programming, sensor calibration, and mechanical design efficiency, which places teams in a real test of their ability to achieve quick response, stability, and complete the race in the shortest possible time.

The competition combines both fun and competitiveness, as it opens the door for different age categories through the use of LEGO robots for beginners, in addition to advanced robots such as VEX or others for older participants and adults, ensuring a fair environment that reflects diversity in skills and expertise.

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. Playground:

- **Arena size: 5 m × 5 m, made of white banner material.**
- **Track shape: Mirror Closed Loop.**
- **Black line width: 1.5 cm, with 20 cm clearance on both sides except at intersections.**
- **Start line: Black line, 20 cm long × 3 cm wide.**
- **Finish area: Black square, 40 cm × 40 cm.**

4. Robot Specifications:

- **All robots must be fully autonomous.**
- **Maximum dimensions: 25 cm × 25 cm × 25 cm, with a maximum weight of 2 kg.**
- **Robots must not damage the track or pose any risk to spectators.**
- **Robots must include a Start/Stop button.**
- **LEGO-specific requirements:**
  - ❖ **Only original licensed LEGO parts are allowed.**
  - ❖ **Only LEGO-recommended batteries are allowed.**

5. Competition System:

- **A race starts between two robots from separate start points on the same track. The winner is the first robot to reach the finish area.**
- **An extra room is provided for testing and calibration before the official race.**
- **Each robot's time is recorded, and the race is video-recorded for verification if needed.**
- **The competition is held on two different maps.**
- **Timing starts when the robot crosses the start line and ends when it reaches the finish area.**
- **Once launched, the robot must remain fully autonomous. Any external control leads to immediate disqualification.**
- **If a robot exits the arena surface, it may retry once from the start line provided the opponent has not yet reached the finish.**
- **The robot must keep the black line between its wheels or keep its sensor on the line to continue.**
- **If the robot leaves the line but remains inside the arena surface, it may continue provided it returns to the same exit point, unless the opponent has already finished.**
- **Only two team members are allowed at the arena during the race. Coaches are not allowed inside.**

6. Scoring and Winner Determination:

- **Case 1: A robot reaches the finish line**
  - ❖ **The team that reaches the finish line first is the winner and receives 3 match points.**
  - ❖ **The other team receives 0 points.**
  - ❖ **Bonus time points are added only for the winning team, calculated as:**

    Bonus Points =(Remaining Time / 180) X 75 .

    Example: If the robot finishes in 60 seconds, 120 seconds remain.

    Bonus Points = (120 / 180) × 75 = 50 points.
- **Case 2: Neither robot reaches the finish line**
  - ❖ **The result is determined using the Sections System only.**
  - ❖ **Sections System:**
    - ▪ **The track is divided into equal or nearly equal checkpoints (Sections).**
    - ▪ **If a robot stops or leaves the track, points are given based on the last correctly passed section.**
    - ▪ **Each section = a defined number of points (total = 75 points).**
  - ❖ **No bonus time points are added.**
  - ❖ **The team with the higher section score is the winner (3 points), the loser gets 0 points.**
- **Case 3: Draw**
  - ❖ **If both teams reach the finish line at the same time or achieve the same section score:**
    - ▪ **Each team receives 1 point.**
    - ▪ **If both finish the race, bonus time points are added using the same formula.**
    - ▪ **If both fail to finish, each team gets only 1 point with no bonus time points.**
- **Organizational Notes:**
  - ❖ **Bonus time points are awarded only to teams that complete the full track.**
  - ❖ **Section points remain the sole reference if the track is not completed.**

7. Penalties:

- **Any attempt at external control (wireless/manual) leads to immediate disqualification.**
- **Any act of unfair play or illegal attempt to disable the opponent's robot results in disqualification.**
- **Touching the robot during the race without the referee's permission leads to immediate disqualification.**

8. Safety and Sportsmanship:

- **All robots must be safe and free from sharp edges.**
- **Robots must be stable and secure during operation.**
- **All teams must respect the rules and show sportsmanship. Any aggressive or unfair behavior may result in penalties or disqualification.**

9. Notes:

The official training arena (ready to print) can be downloaded here:

https://drive.google.com/drive/folders/1I31nXN8HeCL9lild75lvfpSwGO4NwpKd?usp=sharing

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Good Luck.