WORLD ROBOT OLYMPIAD™

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WRO Season 2025 Changes and Important Rules

RoboMission: New Important Rules

1. Each team builds one robot to solve challenges on the field. Maximum robot dimensions before the start are **250 mm x 250 mm x 250 mm**, including cables. After the start, there are no dimension restrictions. A technical report about the robot is also required.

2. Teams can use any materials and components to build their robots, but must adhere to these criteria:

    - **Weight:** ≤ 1.5 kg
    - **Battery Capacity:** ≤ 8000 mAh, compliant with manufacturer specifications.
    - **Voltage:** Electric components ≤ 18 V
    - **Current:** ≤ 5A
    - **Start and Stop Button:** A recognizable button must be used to start and stop the robot. It should be easily accessible and located on the outer side of the robot. Physical buttons are preferred.

3. Sensors:

    - Unlimited in type and number, but usage restrictions apply to age groups.
    - Cameras: Limited to Junior and Senior age groups.
    - LIDAR and 3D scanners: Limited to Senior age group.

4. Motors:

    - No type restrictions, but limits on the number vary by age group [A compressor in pneumatic system is counted as motor]:
        - Elementary: 4 motors
        - Junior: 5 motors
        - Senior: 6 motors

5. Wheels and Tracks: Any type can be used, provided they do not damage the mat or leave sticky material.

6. Other Specific Restrictions:

   - **Gasses:** Only normal atmospheric air is allowed.
   - **Liquids:** Prohibited, including lubricants.
   - **Spray/Aerosol Bottles:** Not allowed.
   - **Pneumatic Systems:** Allowed with a maximum pressure of 3 bar and tank volume ≤ 150 ml. The compressor counts as a motor.
   - **Hydraulic Systems:** Not allowed.
   - **Breakable Materials:** Prohibited if they pose safety risks.
   - **3D Printed Materials:** Allowed, but 3D printing during the competition is not.
   - **Lasers:** Allowed if certified safe for eyes.

RoboSports: New Important Rules

1. Teams must build two robots. Each robot must:
   - Not exceed **200 x 200 mm** in dimensions and **200 mm** in height.
   - Have a maximum weight of **1.2 kg**.

2. Allowed Controllers:
   - **LEGO Controllers:**
     - LEGO® Education MINDSTORMS® EV3 (45544)
     - LEGO® Education SPIKE™ PRIME (45678)
     - LEGO® MINDSTORMS® EV3 (31313)
     - LEGO® Robot Inventor (51515)
   - **Arduino Controllers:** Only those listed under “Official” and “Superseded” on the Wikipedia list of Arduino boards.

3. Equipment Restrictions:
   - No limit on motors, sensors, or cameras.
   - Only DC motors allowed; brushless motors, solenoids, and linear motors are prohibited.
   - No boost converters or flying robots.

4. Communication and Processing:
   - Robots can use Bluetooth or Wi-Fi but cannot communicate with devices outside the team’s robots.
   - Cameras and processing boards can process images but cannot handle other logic.

5. Power Restrictions:
    - Only one battery/battery pack per robot.
    - Cameras and processing boards cannot have separate batteries.

6. Additional Features:
    - Optical elements like lenses or mirrors are allowed with cameras.
    - Small displays are permitted if they fit within the robot's dimensions.

Future Innovators: New Important Rules

1. The use of fire, mist, or liquids is restricted:
    - Fire and mist are prohibited.
    - Liquids are limited to **1 liter of clear water**.

2. Drones can be part of the project but cannot operate at the event.

3. Projects from previous years can be redeveloped if clear advancements are described.

4. UN SDG Goals are no longer mandatory; teams can choose their themes freely.

Themes:

- **Area 1:** Robots Organizing Future Cities
    - Urban transportation
    - Saving resources
- **Area 2:** Robots Supporting Life
    - Habitat building
    - Interstellar travel
- **Area 3:** AI Enabling Robots to Improve Life
    - AI in manufacturing
    - AI in daily living

Future Engineers: New Important Rules

- The age group for this category is defined for students in the age of 14 - 22 years old. (In season 2025: born years 2003-2011)
- The use of electronic differentials with one motor per side (like in a differential wheeled robot) is not allowed.
- Smartphones can be used as cameras and to process image data.

- **Drive Systems:**

The drive wheels must be physically connected, for example, through a gearbox. It is not allowed to use one motor per side.

- **Starting Procedure:**

The robot must follow the starting procedure as outlined in the rules: one button to turn the robot on and another button to start the program. Additional interactions are not permitted

- **GitHub Repositories:**

GitHub repositories must remain online and publicly accessible for at least one year after the event. If this requirement is not met, the repository will be republished by the WRO Association

- **Independent Robot Development**:

Robots must be developed independently by each team. Joint development of robots with minor adjustments to make them appear different at first glance is not allowed. Such robots will still be classified as identical. This behavior is considered deliberate deception and constitutes a violation of the Ethics Code.

Rest further changes in season 2025 are highlighted in yellow color in general rules.
