FORMULASU (AKFIRAT)

RULES
1. **GAME FIELD**

Game Zone is smooth plexiglas covered by 2x4 m white paper. There are game lines, start (pit) area, and obstacles on the zone.

![Game Zone Diagram](image)

a. **Main Line**
   1. It is the line that the robots must follow during the race.
   2. Total Length: 10m / lap
   3. Thickness: 2 cm
   4. Color: Black
   5. Smallest Radius of Curve: 10 cm

b. **Side Lines**
   1. When the main line is blocked by a fixed obstacle, robots must find and follow the side lines to pass the obstacle, and turn back to the main line.
   2. Thickness: 2 cm
   3. Color: Black

c. **Pit**
   1. Pit is the area that the robots must enter and stop when they finish their first lap. It is 15 cm away and parallel to the main line. Its stop and start part is 10x15 cm black rectangle. The entry is perpendicular to the main line by 15 cm long line.
   2. Thickness: 2 cm
   3. Color: Black
2. RACE

a. Timing
1. The only criteria that will determine the winner team is the total time performance of the teams during the competition. Total time includes the time passed during the two laps and the pit-stop, and extra penalty times.
2. Time for the first lab is between the first move of the robot from the start zone and the first service signal given by the robot in pit-stop.
3. Time for the second lab is between the first move of the robot after the pit-stop at the start zone and the moment when it pass the finish line.
4. Teams have no limits to change any part of their robots and its program at pit-stop. The time for the pit-stop is limited to 1 minute.
5. If a robot clears the main line from obstacles, it takes bonus time to reduce the total time. Each obstacle moved out from the main line at least 15 cm away gives 10 seconds bonus time.

b. Penalties
1. If a robot does not enter to the pit-stop, it takes 30 seconds penalty time. The robot can be taken by any team member and the pit-stop process can be done.
2. If a robot does not stop and give service signal in pit-stop, it takes 10 seconds penalty time. The robot can be taken by any team member and the pit-stop process can be done.

c. Retry
1. “Retry” is permitted twice per lap for each team.
2. Any team members are allowed to reset and restart their robot from Start Zone.
3. All restart actions must be finished within 20 seconds. The team member(s) responsible for starting the machines must then leave the game field.
4. When the robot starts to move from start zone by “retry”, the time for that lap is also started again.

3. MACHINES

a. Size
1. Robots can not be larger then 15cm width, 20cm length and 30cm height at start position.
2. When the race starts, robots can enlarge to any size.

b. Structure
1. Robots must be hand-made
2. Any remote control is not allowed
3. Robots can not drop any immobile part during the competition

C. Power Supply
1. Teams must use the batteries given in the material packet for the first lap.
2. In the pit-stop, batteries can be changed.
3. The voltage can not be higher then 6V.

d. Tires
1. Teams must use the tires given in the material packet for the first lap.
2. In the pit-stop, tires can be changed by different ones with different diameter
4. OBJECTS
   a. Fixed Obstacles
      1. For each 100 and 110 cm straight main line, there will be one fixed obstacle to
         block the line. Robots must pass it by using the side lines instead of trying move
         them out of the line.
         
         \[
         \begin{array}{c}
         A \\
         B \\
         C \\
         \end{array}
         \]
         
         05cm < A < 20cm
         10cm < B < 20cm
         05cm < C < 20cm

   b. Body Parts
      1. At any part of the main line, there can be some body parts dropped by the other
         robots.
         
         \[
         \begin{array}{c}
         A \\
         B \\
         C \\
         \end{array}
         \]
         
         01cm < A < 05cm
         01cm < B < 10cm
         01cm < C < 10cm

      2. Weight of each part is less then 100 gr.

5. TEAMS
   a. Proj102
      1. Teams must have 3 members
      2. Students registered to Proj102 – Robot Competition
      3. Each member must give progress reports for every two weeks

   b. SU Robotics Club
      1. Teams must have at least 3 members
      2. Must be member of Robotics Club
      3. Must attend to trainings given by Robotics Club