

# RULES OF ROBOTIC TOURNAMENT

## “XIV Robotic Arena”

### Drone Sandbox

“KoNaR” Student Interest Group  
Faculty of Electronics, Photonics and Microsystems  
Wrocław University of Science and Technology



#### Section I

##### General

###### § 1

1. This document regulates rules of the tournament in category “Drone Sandbox”.
2. In case of 3 or less robots, the category is played as a demonstration and no prizes will be awarded for it.

#### Section II

##### Robot specification

###### § 2

1. Robots can be pre-built, commercial construction.
2. Remote control can be applied using Bluetooth, infrared or radio communication.
3. Remote control receiver and transmitter must operate within frequencies legal within Poland:
  - (a) 26,995 MHz,
  - (b) 27,045 MHz,
  - (c) 27,095 MHz,
  - (d) 27,145 MHz,
  - (e) 27,195 MHz,
  - (f) 34,995 - 35,225 MHz,
  - (g) 40,665 MHz,
  - (h) 40,675 MHz,
  - (i) 40,685 MHz,
  - (j) 40,695 MHz.

4. Robots can't weigh more than 2000 g extended by precision of a measuring equipment.
5. Robots may be type of a fixed wing ( plane, glider), rotorcraft ( helicopter, multicopter ), ornithopter (moving wings) or a blimp.
6. Ready to fly robots must fit in given dimentions:
  - (a) 1 x 1 x 2 m cuboid for blimps.
  - (b) 1 x 1 x 1 m cube for the rest.
7. Robots cannot have any sharp edges or other potentially hazardous elements with exception to propeller blades.
8. Any flaming devices are not allowed.
9. Any devices that could emit gas, fluids or powder are not allowed.
10. Any devices that require flammable gases are not allowed.
11. Passive and active tracking devices in corners of the arena are allowed.
12. Supporting devices should have their own power sources
13. For safety reasons constructor has to have an option of taking direct remote control over the robot at any point in time.
14. Robots functionality cannot be dependent on varying environment during tournament, such as lighting (from dusk to bright reflectors), smoke, loud music or laser effects. The show may be lit by regular lightbulbs, halogens, energy saving lightbulbs, fluorescent lamps, LEDs and other lightsources common in households. Organizers have no control over street lighting near windows of the building. During the show it will be forbidden to use camera flashes and other intense light.

### **Section III**

#### **Route Specification**

##### **§ 3**

1. Route is in a shape of a lemniscate, 10 m long and 5 m wide.
2. There will be two poles, 11 cm in diameter, 3 m high in the middle of each loop, within 5 m of each other.
3. Over the route there will be suspended obstacles on different heights, in shapes of i.e. loops.
4. Any holes will be at least 100cm in diameter
5. There will be safety net extended around the route.

## Section IV

### Competition and Winner Selection Rules

#### § 4

1. The robot that earns most points within their designated 10 minutes will be the victor.
2. Points are earned for each full loop according to the flight direction at attitude of 1 to 2 m.
3. Correct way of going through the loop will be decided by the referee and will be universal for all teams.
4. Robot has to be placed in the starting zone and started on referees mark.
5. Each ground or safety net touch stops the point count.
6. Constructor may decide to relaunch the robot as many times as he wishes, but points from each flight do not add to each other.
7. If multiple flights were completed within time limit, the highest score is written on the leaderboard.