



Innopolis Open

Innopolis University Olympiad
in Robotics

INNopolis
UNIVERSITY

Profile

INTELLIGENT UNMANNED AERIAL VEHICLES

Age group

13-18 years

HOW TO QUALIFY FOR THE CHALLENGE

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Table of Contents

1. Applying for qualification	3
2. Requirements for competition materials	3

1. Applying for qualification

- 1.1. A team must apply for qualification through a special form on the corresponding challenge page of the official Innopolis Open website.
- 1.2. Application deadline: 13th May 2019.
- 1.3. Applications submitted with violations are not accepted.
- 1.4. When multiple applications are submitted by one team, only the application submitted last is accepted for consideration.

2. Requirements for competition materials

2.1. Competition materials include:

- 1) demo video
- 2) specification

2.2. Requirements for the demo video:

- 1) The video must be shot from the angle making it possible to see:
 - a. The flight of the UAV in a manual mode (takeoff, hovering, flying along a square/rectangular trajectory in a vertical plane) – 1 point.
 - b. Switch from a manual mode to autonomous mode (hovering) and back – 2 points
 - c. Landing (manual or autonomous mode) – 0.5 points
- 2) The video must show a participant run the UAV autonomous flight program from a computer or in any other remote way.
 - a. The UAV must take off vertically to the height of no less than 1 meter and hover in the terminal position for no less than 5 seconds. Completed task is awarded 1 point.
 - b. After takeoff, the UAV must fly along a trajectory forming a square of 1 meter on a side in a vertical plane. Completed task is awarded 4 points (flying along one side of the square trajectory)
 - c. After the 'square' the UAV must fly along the following trajectory: circle of 1 meter radius in a horizontal plane, the nose of the UAV pointed towards the center. Completed task is awarded 7 points.
 - d. After completing the trajectory, the UAV must land autonomously. Completed task is awarded 1 point.
 - e. Takeoff, flying along the trajectory and landing must be accompanied by light indication. Completed task is awarded 1 point.
 - f. The video must show clearly that after running the program and before landing no one interacts with the robot anyhow.
- 3) The definition of the video must be no less than 1280x720 (HD).
- 4) The video must be no longer than 4 minutes. The video must be filmed in one shot.

2.3. Requirements for the specification

- 1) The specification must consist of one page and be saved as PDF. Its size must be no more than 5 Mb.
- 2) The specification must include high-quality photos – 1 point.
 - a. A joint photo of the team and the robot.
 - b. A single close-up photo of the robot.
- 3) The following information about the robot must be included – 3 points:
 - a. Overall dimensions of the robot, weight
 - b. Light indication system used
 - c. Characteristics of the battery (output voltage, current output, capacity)
 - d. Characteristics of the positioning system (equipment used, navigation principle)

- e. Characteristics of the on-board electronics (flight controller, computer, main interfaces)
- 4) The following information about the team must be included – 1 point:
- a. Name of the team
 - b. Name of the institution, city, region
 - c. List of team members
 - d. Coach
 - e. Roles and functions of each member of the team