

Drone Racing Section: *NOTE: This section will run only if there are at least 5 teams presented.

The drone racing category will be divided between low-cost and high-cost groups. The groups have their own tasks and a winner will be identified from each.

General Requirements(For the both categories): 1.

Judging and marshaling:

- All races will be managed by an appointed team of judges.
- Each race will be monitored by judges, timing/lap systems and marshals to maintain fair and accurate competition.
- In the event of a mid-air collision, pilots can resume the race if they are able to take off again without intervention, otherwise their heat is considered as did not finish. 2.

Pilot Responsibilities:

- Pilots are responsible for operating and maintaining their own equipment.
- Pilots are responsible for ensuring proper flight operations through timing gates and recording all official times. If timing is not recorded in the official timing system, or inaccurately recorded, it is the pilot's responsibility to prove the accurate time or other method. 3. Race Commencement:

At the case of premature start a reflight is announced and 3 points are deducted. 4.

Disqualifications:

- Any pilot not physically present on the flight line fully prepared to race at the time of their scheduled heat will receive a disqualification and will not receive a rerun.
- Unsportsmanlike conduct will not be tolerated. All decisions made by the Race Director or Judge are final.

5. Free Practice:

- Practice flights on the racing circuit, other than those authorized by the organizer, are strictly forbidden under threat of being disqualified from the contest.
- A practice session will be organized at the beginning of the event. Each competitor will only enter this practice session when he has finished his models registration, processing and scrutineering and the model is deemed safe for flight in the contest.
- It can be a free practice session organized by groups with an allocated time identical

for each group. The allocated time and the number of competitors per group are defined by the organizer.

- Each competitor can do as many circuit laps as he wants during the practice time allowed to his group. Once the practice time is over.

- In case of a crash, where the model cannot resume flight, the model must stay on the ground with motors off until the end of the practice session, the competitor cannot then request another practice time except if the crash reason cannot be attributed to the competitor.

Low-Cost section:

Requirements:

1. The cost of the drone should not exceed \$150, all checks or screenshots must be provided to the judges on the day of the competition. In the case of individual Assembly of the drone, it is also necessary to provide all checks or screenshots for the purchased components, which also should not exceed \$150.

2. The drone should be prepared for two main tasks (drone racing and the future postman)

3. Field Dimensions:

- The field is at least 60 m long, 30 m wide and 6 m height.
- As a navigational aid there is running trace on the floor.

4. Racing stage:

- 4.1 Scenario: The drone racing stage consists of free flight through predefined obstacles and paths. The race is performed in 3 laps and the winner is awarded the one who has biggest number of points. Pilots must stay within all prescribed flight paths. Pilots must adhere to the prescribed launch sequence. No movement before the starting signal. False starts will incur a penalty. Pilots must maintain control of their aircraft at all times and only fly within their skill

level. Any pilot who exhibits unsafe flying procedures may be disqualified at any time from the event. Pilots must successfully fly through all gates, flags, and other obstacles on the course. If a pilot misses an obstacle, they must safely turn around and attempt the obstacle again. They will have up to two further attempts before being disqualified from the heat. The Flight Line Director, Race Director or Race Commissioner has the right to disqualify any pilot for any reason if the pilot or piloting behavior is deemed unsafe or if the pilot has breached any rule or regulation within this document. 4.2 Requirements: 1. Team must successfully finish the 5 laps of predefined path through obstacles.

2. Team must race individually one by one. 3. Drone must follow track and cannot shortcut the path to gain advantage. 4. Teams are not allowed to assist to a personal drone physically besides by manipulating with remote control.

5. Teams that successfully finished the race are awarded with following points:

- The fastest team – 25 points
- 2nd fastest team – 18 points
- 3rd fastest team – 15 points
- 4th fastest team – 12 points
- 5th fastest team – 10 points
- 6th fastest team – 8 points
- 7th fastest team – 6 points
- 8th fastest team – 4 points
- 9th fastest team – 2 points
- 10th fastest team – 1 points
- Others – 0 point

4.3 Deductions:

- Team that get off the track and gains advantage is deducted with +10 seconds.
 - Team that ignores track to gain advantage is disqualified and it will be considered as did not finish for this stage only.
 - Team that performed a false start is awarded a reflight and deducted with 3 points
 - Team that has purchased drone which is 100\$ more expensive comparing to proposed drone is deducted with 10 points.

8. Reflight:

- A reflight can be granted when a model cannot be prepared or when the flight cannot be started in the allotted time limit for safety reasons, or is disrupted by external interference.

- If for a reason that is not a competitor's fault, a competitor has been forced to land on request of an official.

- A failure of the model, video system or radio control cannot be considered as reasons for a reflight unless it can be proven that these were caused by external factors beyond the competitors control.

- Incidents during races such as collisions between models or with obstacles cannot justify a reflight.

- Granting of a reflight is the responsibility of the contest director. A reflight leads automatically to a cancellation of the current flight for which he has been granted a reflight.

5. Future Postman Stage:

5.1 Scenario:

A newly founded logistics company “INFOMATRIX-ASIA” employs a drone to deliver small packages to the customers. Participant was assigned as a pilot of the drone and as day 1 task 5 boxes should be delivered to their owners precisely as fast as possible. Within a town that company operates government provides strict air traffic regulations and the special services penalizes those who break them. Moreover, company itself cares about a service they provide and also is very strict with conditions of packages they deliver. The pilot of a drone might receive a deduction for dropped boxes.

5.2 Requirements:

1. Team must deliver 5 boxes to their respective destinations, and precisely place them
2. Team must deliver each box one by one.
3. Drone must follow track and cannot shortcut the path to gain advantage.
4. Teams are not allowed to assist to a personal drone physically besides by manipulating with remote control.
5. Dropped box is remained on the ground until teams session ends.
6. Teams that delivered and placed precisely every box are awarded with following points:

- The fastest team – 25 points
- 2nd fastest team – 18 points
- 3rd fastest team – 15 points
- 4th fastest team – 12 points
- 5th fastest team – 10 points
- 6th fastest team – 8 points
- 7th fastest team – 6 points
- 8th fastest team – 4 points
- 9th fastest team – 2 points
- 10th fastest team – 1 points

• Others – 0 point

5.3 Deductions:

1. Team that get off the track and gains advantage is deducted with +10 seconds.
2. Team that ignores track to gain advantage is disqualified and it will be considered as did not finish for this stage only.
3. Team that drops a box is deducted with +2 minute points per drop and if dropped boxes number exceeds 3, the team is disqualified and will be considered as did not finish for this stage only.
4. Team that has purchased drone which is 100\$ more expensive comparing to proposed drone is deducted with 10 points.

High-Cost Section:

Requirements: 1. The cost of the drone should not exceed \$1000, all checks or screenshots must be provided to the judges on the day of the competition. In the case of individual Assembly of the drone, it is also necessary to provide all checks or screenshots for the purchased components, which also should not exceed \$1000. 2. Race will be allocated all around the university, The flight range of the drone must exceed 500 meters to travel the entire distance.

3. Around the perimeter will be established obstacles that the pilot must pass. For each failed obstacle, the time increases by 20 seconds. 4. Drones can be VR or video transmission control. 5. Field Dimensions:

- The field is at least 300 m long, 200 m wide and 30 m height (obstacles might be placed on the roof of the buildings).
- As a navigational aid there is running trace on the floor.

6. Team must race individually one by one for preventing any crashes. 7. Drone must follow track and cannot shortcut the path to gain advantage. 8. Teams are not allowed to assist to a personal drone physically besides by manipulating with remote control. 9. Teams that successfully finished the race are awarded with following points:

- The fastest team – 25 points
- 2nd fastest team – 18 points
- 3rd fastest team – 15 points
- 4th fastest team – 12 points
- 5th fastest team – 10 points
- 6th fastest team – 8 points
- 7th fastest team – 6 points
- 8th fastest team – 4 points
- 9th fastest team – 2 points
- 10th fastest team – 1 points
- Others – 0 point

10. Deductions:

- Team that get off the track and gains advantage is deducted with +10 seconds.
 - Team that ignores track to gain advantage is disqualified and it will be considered as did not finish for this stage only.
- Team that performed a false start is awarded a reflight and deducted with 3 points

- Team that has purchased drone which is 100\$ more expensive comparing to proposed drone is deducted with 10 points.

11. Reflight:

- A reflight can be granted when a model cannot be prepared or when the flight cannot be started in the allotted time limit for safety reasons, or is disrupted by external interference.

- If for a reason that is not a competitor's fault, a competitor has been forced to land on request of an official.

- A failure of the model, video system or radio control cannot be considered as reasons for a reflight unless it can be proven that these were caused by external factors beyond the competitors control.

- Incidents during races such as collisions between models or with obstacles cannot justify a reflight.

- Granting of a reflight is the responsibility of the contest director. A reflight leads automatically to a cancellation of the current flight for which he has been granted a reflight.

Scenario:

The drone racing stage consists of free flight through predefined obstacles and paths. The race is performed in 3 lap and the winner is awarded the one who has biggest number of points. Pilots must stay within all prescribed flight paths. Pilots must adhere to the prescribed launch sequence. No movement before the starting signal. False starts will incur a penalty. Pilots must maintain control of their aircraft at all times and only fly within their skill level. Any pilot who exhibits unsafe flying procedures may be disqualified at any time from the event. Pilots must successfully fly through all gates, flags, and other obstacles on the course. If a pilot misses an obstacle, they will be penalized by adding 20 seconds for each obstacle. They will have up to two further attempts before being disqualified from the heat. The Flight Line Director, Race Director or Race Commissioner has the right to disqualify any pilot for any reason if the pilot or piloting behavior is deemed unsafe or if the pilot has breached any rule or regulation within this document.