



DRONE-ACHARYA

RULE BOOK

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Introduction:

The hobby industry is exploding with model aircraft, and multi-rotors are no exception. These fascinating aircraft combine with the flight characteristics of both the plane and a helicopter. This time KLE Technological University is giving you the opportunity to showcase your talents through Multi-rotor. Come meet some of the top Multi-rotor pilots, technicians, inventors and enthusiasts of the country at the Droneacharya. Amaze the audience with your models and make this competition a great success with your performances. Let's bring a revolution in Indian Aeromodelling technologies by changing the trends. You will be judged on both the aspects of a multi-rotor that is on the expertise of your flying skill and the stability of your bot.



Event Structure :

The competition requires the participants to design and fabricate a VTOL Drone and perform a set of maneuvers where it has to be passed through various obstacles and perform a payload delivery task. There will be 3 rounds in the competition:

Round 1:

This is a Qualifying Round (based on the completion time only).

Model has to be landed over 7 circles of different diameters in a particular orientation which will be arranged in some order.

Circles will be placed at a distance of in both the direction (front/back and left/right).

Circles are numbered according to their decreasing size in a random fashion. You have to start from the 1st circle and follow 1, 2, 3... 7 in succession without skipping any of them. The end point will again be the 1st circle.

1st circle has the diameter of 140 cm, 2nd is of 120 cm, 3rd is 80 cm and it goes till 7th in a random order The smallest diameter being 80cm and largest being 140cm.

When the model lands, it's center should lie inside the circle to be able to proceed to the next in succession.

In case the center of the model is outside when it lands, the model has to be lifted again and should be landed properly. This will go on until the center lies inside the circle.

A specific number of teams with best completion times will go on to the 2nd round.

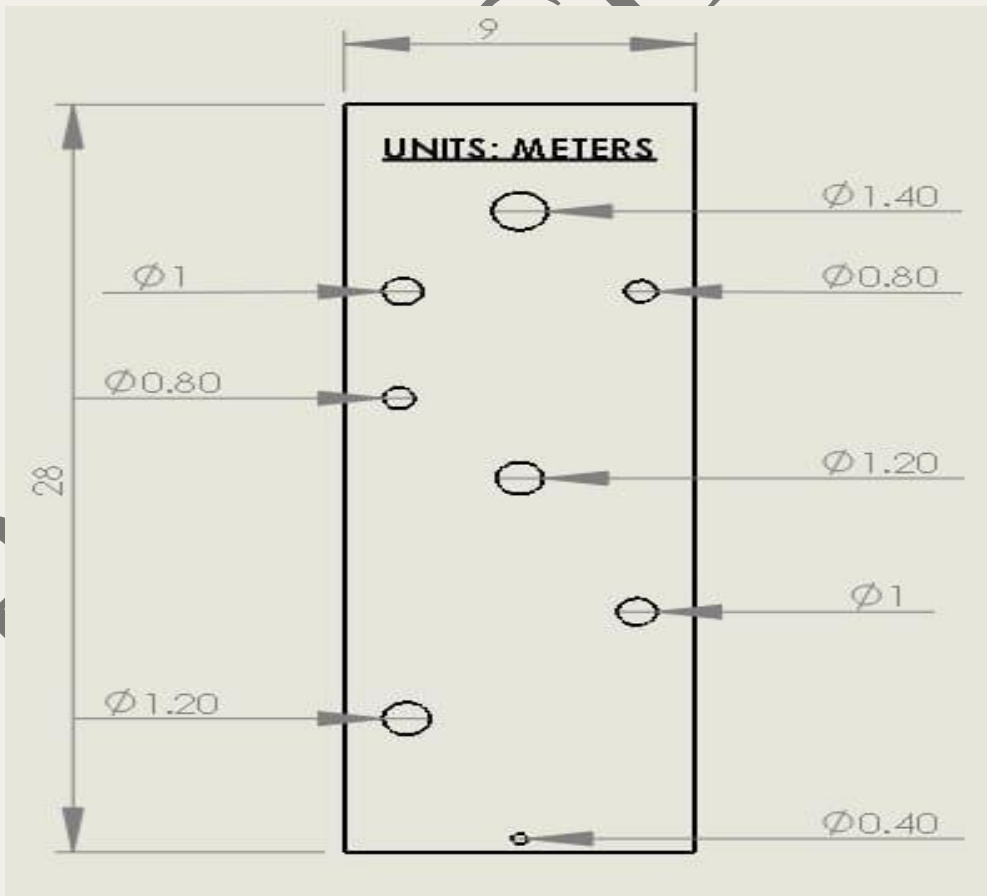
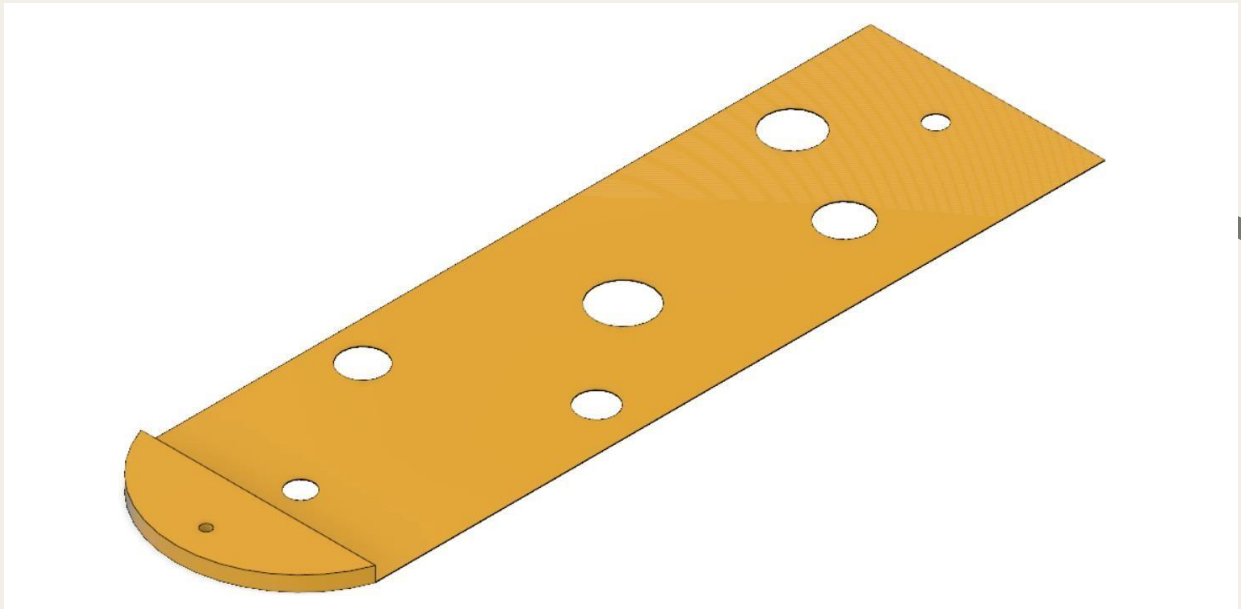
Penalties in Round 1

1) Technical time out (In case of any damage to drone the team can ask for 3-time outs of 2 minutes each)-A penalty of 15 sec on each time out.

2) Not going in set pattern of ascending circles- 10 seconds penalty for each wrong circle

3) skipping circle- 10 seconds penalty to skip a circle

Arena for Round 1



- The dimension for arena in each round is 14m X9m
- In first round we will have 7 loops of different diameters placed in a random fashion starting from 140cm to.8m

ROUND 2

1. The model has to successfully cross many obstacles.
2. In this arena the drone have to passed through the obstacles
3. Each obstacle is present in different height
4. The pilot should be able to control the stability of bot and pass through the hurdles in a specific path that will be predefined by us
5. It will test pilots maneuvering skill as well as stability of his fabricated materials
6. The model will have to pass through some rectangular frame in a zigzag fashion. Successful passing through each frame will fetch points.

In this the multi rotors have to pass through the path in a that has poles at different heights in a set pre-defined pattern(pattern will be given)

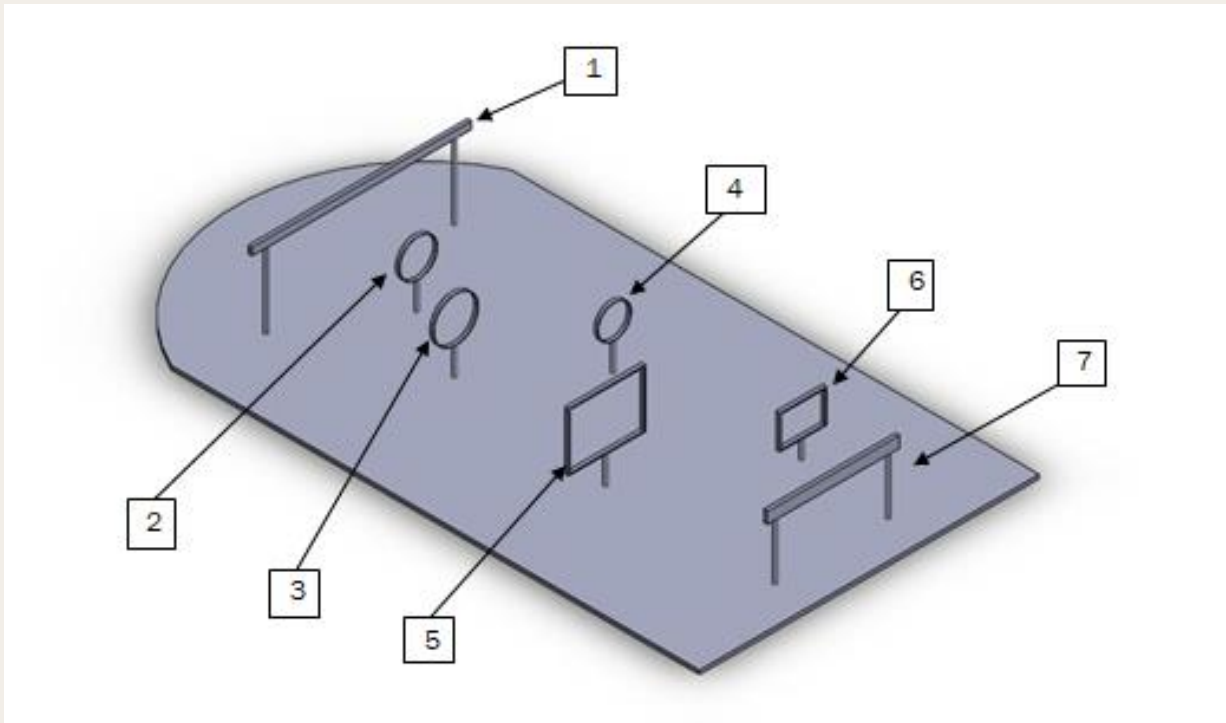
Scoring Criteria (Round 2):

- Each obstacle will carry specific points based on their complexity level.
- Penalty of -20 if model misses any obstacle.
- Penalty of -10 if model touches any frames of the obstacle.
- In case of a tie between two-person completion time will be taken into account.

Obstacle Number points

- | | |
|---|---------|
| 1. Circular loop | - 30 pt |
| 2. Building | - 40pt |
| 3. Any other shape loop
(triangular/rectangular) | - 50 pt |
| 4. .Follow given path | - 100pt |
| 5. .Landing | - 10pt |

ARENA FOR ROUND 2:



ARENA DESCRIPTION:

In this arena the pilot have to maneuver their multi rotor through things that are placed at different heights stating from **150 cm to 200cm**.It is a stadium of 14mX9m

Obstacle 1: Rectangular shape- (At height: 2m, lengthxbreadth 5x1.5m)

Obstacle 2: Circular shape –(at height :0.75m, dia:2m)

Obstacle 3: Circular shape –(at height :1m, dia:1.5m)

Obstacle 4: Circular shape –(at height :1.25m, dia:1m)

Obstacle 5: Square shape –(at height :0.75m, length :2m)

Obstacle 6: Square shape –(at height :1m, length :1.5m)

Obstacle 7: Rectangular shape- (At height: 1m, lengthxbreadth 3x1m)

Round 3



Model Specifications

- 1.The maximum dimension between any two motor shafts of the vehicle should be lesser than 450 mm and greater than 250mm.
- 2.Metal and carbon fiber Propellers are not allowed.
- 3.Any material can be used for construction.
- 4.Arduino and other boards can be directly used. You may or may not use pre-programmed boards.
- 5.Exchanging of models is strictly not allowed. Each team must have its own model. Throughout the event, in all the rounds only one model must be used.
- 6.RTF models will not be allowed.

Team Structure:

A team can consist of a maximum of 5 members. Students from different colleges can form a team.

RULES AND REGULATIONS

General Rules:

1. Pilots must show Fail Safe and Arming/Disarm Working at Registration Desk
2. Drone Specs: - Up to 10-inch props. – 450mm max frame size (motor shaft)
3. 2, 3 or 4 blade max
4. Any material for props but not Carbon Fiber.
5. No Weight constraint
6. Turtle Mode is allowed at drone Acharya to flip and recover your quad.
7. Pilots will carry a minimum of 2 batteries
8. Pilots will carry their own battery chargers, charging points would be provided.
9. Pilots should bring their own soldering and other materials.
10. All frames must pass a safety and airworthiness inspection. Once the airframe has been checked and approved, it must not be modified or changed, or it will need to be re-inspected.
11. Coreless motors are not allowed.



Venue Rules:

1. Pilots must adhere to all rules within the competition venue, and will not fly in any other part of the venue unless it is a designated flight zone.
2. Pilots must arrive at the venue with their complete setup 1 hour before the official event time and must be in complete READY-TO-GO state 15 mins before event time.
3. Pilots will NOT be given any practice sessions during the 15 mins before the event starts.
4. Pilots who are not in READY-TO-GO state 15 mins prior to event start will be disqualified from participating in the competition.
5. Pilots MUST NOT assume any change of event time until it is officially announced by the organizers.
6. Pilots must contain all equipment and airframes within the pilot pit area and must not solder, weld or cause any spark within the pit area. There will be established workbench areas for soldering, repairs, and modifications.
7. A charging station would be provided with power points.
8. General charging of electronic devices including radios or any device with a self-contained power supply is permitted.
9. All batteries must be stored in a LiPo-safe bag or in an approved, fire-resistant container.

RACE RULES:

1. Pilots must stay within all prescribed flight paths.
2. Pilots must keep all multicopter in the disarmed state until they have been given the "ARM" signal. This will
3. happen only when the aircraft has been placed on the starting deck.

4. In event of unexpected media intervention while Timeout timer, timer paused and resumed on the announcement.
5. Elimination for any non flying pilot discovered to have plugged in at the pits during any heat.
6. Pilots will NOT be given any Retries
7. Pilots must adhere to the prescribed launch sequence. No movement before the starting signal. False starts will incur a penalty.
8. Pilots must maintain control of their drone at all times and only fly within their skill level. Any pilot who exhibits unsafe flying procedures may be disqualified at any time.
9. Once pilots have successfully completed all laps, they must return to the start/finish pad, land and DISARM.
10. Pilots that have crashed at any point during the heat and are unable to resume racing must DISARM their rotor and wait until the heat is over.
11. Racetracks would have gates, pilots must successfully fly through obstacles (if any) on the course. If a pilot misses an obstacle, they must safely turn around and attempt the obstacle again. If they don't turn around and continue to race, that entire heat would not be counted.
12. If a pilot due to any reason, knowingly/unknowingly/accidentally goes out of bounds then pilots first priority should be to get the drone back in the bounds. And continue to race. If such incident occurred multiple times then organizers have full right to disqualify the pilot from heat or whole event.
13. In the event of a crash or the inability to resume flight safely, the pilot must immediately DISARM their aircraft and give the Thumbs Down signal. For that heat, the pilot is deemed as Do not fly

Judging Rules and Race Format

- All races will be governed by an appointed team of judges/organizers.
- All races will follow the general rules and regulations of the competition.
- Each race will be monitored by judges, cameras, timing/lap systems and volunteers to maintain fair and accurate competition.

NOTE : The organizers reserve the right to change any of the following rules. Changes will be highlighted on the website/facebook/instragram page in advance and will also be mailed to all the registered participants. However, you are suggested to keep checking the website/facebook page regularly.

Resources:

- Electric Sockets (220-230V) will be provided to the teams for charging the batteries.
- Transmitter and Receiver will be provided to the participants on the day of event.
(note: In case of any damage full compensation will be taken from the Team members)
- We strongly recommend you to bring your own toolkit.

Event Organizers Contacts

For any queries contact any of the event managers or mail us at aerokle@bvb.edu

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LET'S DARE TO
CONQUER SKY