SKY-DIVE

Summary:

Team Challengers of Sahyadri College of Engineering and Management, Mangalore invites all university students to participate in Aerophilia '23. The contest will provide a real-world aircraft design experience for engineering students by allowing them to validate their analytical skills.

Student teams will design, fabricate, and demonstrate the flight capabilities of an unmanned, electric-powered, radio-controlled aircraft that can best meet the specified mission profile. The goal is a balanced design possessing good, demonstrated flight handling qualities, and practical and affordable manufacturing requirements.

Check the rules package carefully as items and approaches that were legal in past years may not be legal for this contest year. Only the contents of this year's Rules package along with the current FAQ and Q&A documents hold bearing on the requirements and/or allowances for the current contest year.

It is the responsibility of the teams to know and follow all provided rules, the FAQ and Q&A, and all contest day briefings. Winning teams will receive prizes worth ₹70,000. The team with the best Report Score will receive a prize of ₹5,000.

GENERAL INFORMATION

CLICK HERE TO REGISTER:

Registrations will be open on the official Aerophilia website www.aerophilia.in soon and will be updated on through social media once the website is launched.

For now the teams are required to fill the google form to register and submit the abstract before the deadline

TEAM REQUIREMENTS

- Maximum 5 members in a team.
- Participation allowed for school & college students with valid ID proof.

COMMUNICATIONS

The contest administration will maintain a website (www.aerophilia.in) containing the latest information regarding the contest schedules, and the rule book.

Questions regarding the contest, schedules, or rules interpretation may be sent by email (info.aerophilia@gmail.com)

FLIGHT LINE COURSE

The orientation (direction) of the flight course will be adjusted based on the prevailing winds as determined by the Flight Line Judge. The flight course will be positioned to maintain the greatest possible safety for personnel and facilities. The nominal flight course will be uploaded on the official Aerophilia website.

Note: The final flight course may vary depending on the weather and other physical aspects.

SCHEDULE

DESIGN REPORT/ABSTRACT SUBMISSION

Design Reports will be submitted online via email to submission@aerophilia.in. The design report must be submitted by 23:59 Indian Standard Time on **20.11.2023**.

Reports will be judged “as received”. No corrections/additions/changes will be allowed by the organisers so check your reports carefully before submitting them. Once a Report is submitted, no changes are allowed. Submission of Reports is electronic only (no hard copy required). The details for the electronic format and submission are at the end of the report section in this rules document.

MISSION AND VEHICLE DESIGN

GENERAL

- Mission 1 – Spot landing
- Mission 2 – Manoeuvring
- Mission 3 – Stunt round

MISSION SEQUENCE

- Aircraft must be capable of performing all required missions.
- The Missions must be flown in order.
- A new mission cannot be flown until the team has obtained a successful score for the preceding mission.
- The aircraft must be flown in the same configuration for all three missions. For example, if any pod is carried under the wing, then that pod must be flown in all three missions.
- The aircraft must complete a successful landing at the end of each mission. If the aircraft takes any serious damage during the landing, it would be considered a crash landing.

MISSIONS

Mission 1 – Spot landing:

- The teams must take off their plane, fly it for at least 30 seconds and land it properly at the designated area i.e.; a circle of X metre in diameter.
- No part of the plane should be outside the circle.
- If the teams land within the circle but exceed the time limit, then only 1 point will be awarded.
- If the plane crashes, then 5 points will be deducted.
- The pilot is allowed to move anywhere in the arena during Mission 1.
- There will be a 2-minute flight window for this mission.
- Time starts when the aircraft throttle is advanced in the first attempt.
- Teams must complete a successful landing to obtain a score and successfully complete mission 1.
- **Scoring:**
  M1 = 20 for a successful mission. (10 for a successful flight and 10 for landing in the specified area)

Mission 2 – Manoeuvring:

- The aeroplane must manoeuvre through a series of hoops, which will be shown on the day of the event.
- The pilot is not allowed to move around and must stay in a fixed spot in the arena.
- A time window of 5 minutes will be provided, during which the teams can complete any number of laps of the set course.
- The scoring will take place depending on the number of laps completed.

- In mission 2, a lap will be considered successful only when the aeroplane passes through all the hoops in the given chronological order.
- Teams must complete a successful landing to obtain a score and successfully complete mission 2.
- **Scoring:**

  M2 = 10 * n, where n stands for the number of successful laps.

Mission 3 – Stunts:

- Evaluation will be based on the time of flight and the number of stunts performed by the participant.
- Time duration allocated for each team is **10 minutes.**
- Stunts' performance will be the first criterion for evaluation.
- Time of flight will be considered only if 2 or more teams get equal marks. The fastest team will be considered.
- If a plane crashes, then only 70 percent of points earned from stunts will be awarded.
- A team can perform any number of stunts according to their abilities.
- Evaluation Scheme: Total points = Stunt points.
- Maximum points awarded in this round is **50 points**.
- No stunt can be performed more than once.

Sl.No	Stunt	Points
1.	Loop (Any direction)	5
2.	Inverted flight (10 seconds)	5
3.	Roll along the Vertical axis (5 seconds)	5
4.	Roll along the horizontal axis (5 seconds)	5
5.	Through the loop	10
6.	Horizontal 8 path through the hoops	10
7.	Stall turn	10

- **Scoring:**

M3 = n, where n stands for points awarded for successful stunts performed.

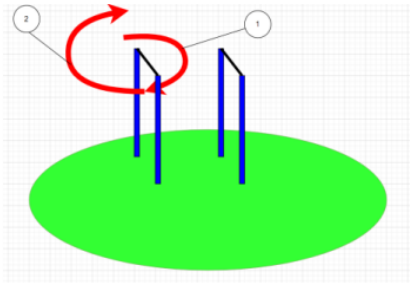

Fig 1: Stunt no. 5

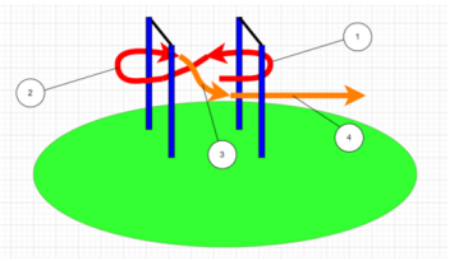

Fig 2: Stunt no. 6

AIRCRAFT REQUIREMENTS

GENERAL

- The maximum wingspan allowed is 1.5 metres.
- 3D stunt plane models can be used.
- All models must be self-built. No ready-to-fly models can be used.
- Teams flying out of the flying boundary will be eliminated from the particular round.
- Teams crossing the spectator boundary will be disqualified from the event.
- The verdict of judge's and organisers is final.

TECHNICAL INSPECTION

All vehicles will undergo a technical inspection by a designated contest tech inspector before being allowed to make any competition flight. All the decisions taken by the Tech inspector will be considered final.

DESIGN REPORT/ABSTRACT

All material contained within all design reports must be the original work of the teams or appropriately cited in the bibliography section of the report. Any material that is found to be uncited and non original work will be subject to a penalty. Based on the severity, penalties can include points deducted from the report score up to a 100% reduction or full disqualification.

Formatting Requirements:

- Reports must be in PDF format. Reports that are not in PDF format will not be accepted.
- Reports must be one- and one-half line spacing with a 10-pt Arial font. Text, tables, and figures should be clear and readable for the judges. The reports will be assessed for format and readability at the judges' discretion.
- Reports must have the College name and event name on the cover page.
- The absolute maximum page count for the report is 10 pages, the PDF reader "pages" value will be used as the official page count.

Submission Requirements:

Each team must email an electronic copy of their design report as outlined below to submission@aerophilia.in.

- Electronic report files must be named: "Aerophilia22_Skydive_[college name]_DESIGN_REPORT.pdf".
- Reports that do not meet the file naming convention above will incur a 10-point penalty.
- The electronic report must be a single file with all figures/drawings included in the proper report sequence in PDF format.
- The electronic report must not be greater than 5MB in size.

Scoring:

Reports will be scored on a 50-point basis following the guidelines outlined below.

All items requested below should be present, easy to locate and identify, well documented, and in the correct section for full scoring. Reports will be assessed on how well they communicate the required information given the size and length constraints.

The design report must include the following:

- Executive Summary (5 points.)
- Management Summary (5 points).
- Conceptual Design Approach (10 points).
- Preliminary Design (10 points).
- Detail Design (10 points).
- Bibliography (5 points).
- Manufacturing Plan (5 points)

FINAL SCORING

Each team's overall score will be computed from their Design Report Score and Total Mission Score using the following formula:

- SCORE = Design Report Score + Total Mission Score

The Total Mission Score will be computed using the following formula:

- Total Mission Score = M1 + M2 + M3

NOTE: Rules are subject to change. All updates will be posted on the official Aerophilia website (www.aerophilia.in)

Any Queries?Contact:

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