

## **Buoyancy Engineering for Sustainable Aviation**

**Aeromodeling Club** organised a Paper-Plane Modelling Workshop on 25 August 2025. The workshop followed an insightful guest lecture by **Prof. Pant** on “Buoyancy Engineering for Sustainable Aviation”. Students gathered in Seminar Hall 5, where Prof. Pant also interacted with them on internship opportunities at IIT Bombay. Thereafter, a short presentation on paper-plane modelling was delivered, followed by a hands-on tutorial. The event concluded with a friendly competition of flying the paper-plane models designed during the workshop.

### **Objectives of the Event**

- To provide students with an engaging hands-on learning experience.
- To introduce the fundamentals of paper-plane making and flying skills.

### **Event Overview**

The Paper-Plane Modeling and Flying Workshop was organised by the student members of the Aeromodeling Club as part of the effort to revive club activities. The presence of Prof. Pant provided an excellent opportunity to inspire students towards model-making activities, such as paper planes, hot-air balloons, and gliders. He also shared guidance on IIT Bombay internship opportunities to help students explore research and career prospects.

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Figure 1: The presentation and competition Round 1

The technical presentation was delivered by **Mr. Naveen Kumar** (VII AE). He emphasised that paper planes are not merely toys, but can also serve as engineering prototyping platforms. Each fold in the paper-plane design process demonstrates key aspects of aeronautical engineering, such as control surface deflection, centre of gravity adjustment, design precision, and iterative problem-solving. He also shared a case study on how paper-plane concepts have inspired real aircraft designs, including the “Flying Wing Concept.” To set the stage, two model aircrafts – the F-35 and the Phoenix Glider were showcased.

To ensure all participants could follow the step-by-step folding process, the workshop used a real-time camera feed projected from the presenter’s desk. Volunteers assisted participants in small groups. Each student was given two sheets of paper to practice two different models. Students were paired in groups of two, and after completing the folding session, a flying competition was held.

## Competition Rounds

**Round 1:** Conducted inside the seminar hall by Ms. Vaishnavi, students of VII AE. Each team flew their “fighter plane” design, and the five teams achieving the longest flight range were shortlisted. **Shortlisted Teams:**

1. Prof. Pant
2. Prof. R. K. Mishra

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3. Gagandeep and Ganesh
4. Khushwanth and Nandish
5. Aishwarya and Darshan

**Round 2:** Conducted in the double-lobby area. Teams launched their “glider planes” from the first floor, competing for maximum endurance time. The longest flight lasted **12 seconds** by Prof. Pant, followed by **10.5 seconds** by Prof. R. K. Mishra. Both professors graciously suggested that the winning prizes be awarded to student participants.



Figure 2: Round 2 flying by the participants

## Results

### Winners:

- Khushwanth K (1MJ23AE031), V AE
- Nandish P K (1MJ23AE050), V AE

### Runners-Up:

- Ganesh K (1MJ23AS009), V AS
- Gagandeep B (1MJ23AS008), V AS

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The winners received a cash prize of Rs. 1000, while the runners-up received Rs. 500.

The workshop concluded with a group photograph featuring the Principal, Prof. Pant, faculty members, and all participants.



Figure 3: Group photo of the participants

## Outcomes and Impact

- Participants understood the fundamentals of paper-plane modelling as an introduction to aeronautical design concepts such as centre of gravity, control surfaces, and stability.
- Students experienced hands-on problem-solving, teamwork, and design iteration through the folding and flying exercises.
- The friendly competition encouraged creativity and innovation while reinforcing engineering principles in a fun setting.
- Interaction with Prof. Pant and Mr Naveen Kumar provided students with broader perspectives on how simple model-making activities can evolve into valuable engineering prototypes.
- The event helped revive the Aeromodelling Club activities, creating enthusiasm for future workshops on hot-air balloons, gliders, and UAVs.

## Conclusions

The Paper-Plane Modelling Workshop successfully combined learning with recreation, allowing students to connect theoretical principles of aerodynamics with practical hands-on activity. Beyond introducing engineering aspects of flight, the event



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built teamwork, problem-solving, and design thinking skills. The enthusiasm shown by students and faculty highlighted the importance of experiential learning, while the competitive element kept the session lively and engaging. Overall, the workshop set a positive momentum for strengthening aeromodeling culture in the department.

**Report by:** Shantanu S. Gulawani

Affiliation: Faculty in the Department of Aerospace Engineering,

MVJ College of Engineering