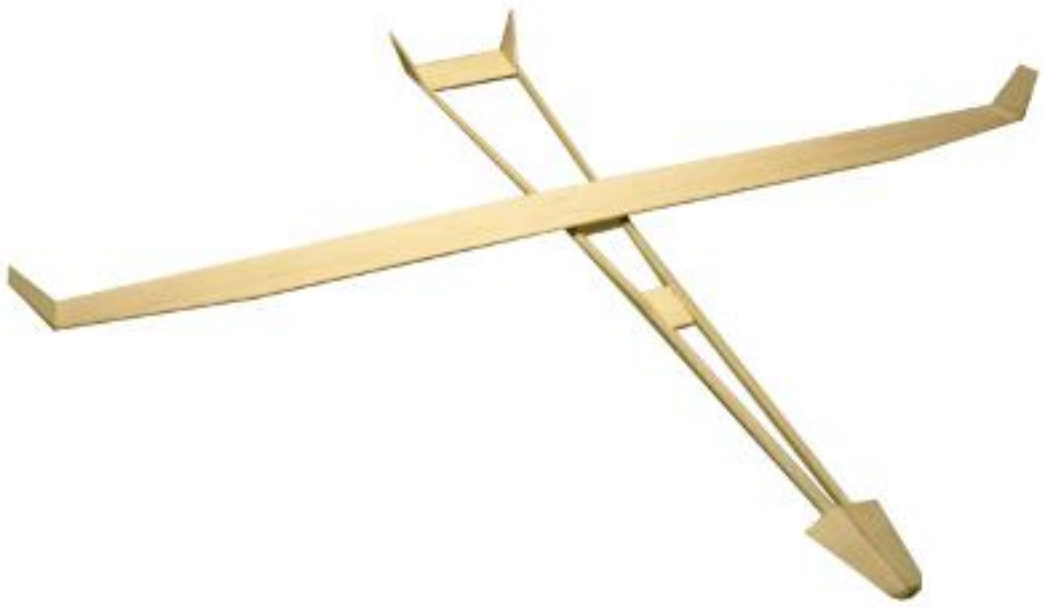
Nimble'17
Balsa Glider

Balsa Glider Competition



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1.Introduction

People have always understood that flight was possible from observing birds,

but it took thousands of years to actually achieve and there were many hurdles along the way. Perhaps, Gliding is the most elegant and easy way that humans can get airborne. It is an exciting way to fly, soaring on the same rising currents of air that the birds use, with no roaring engine to spoil the peace. This experience is a perfect introduction to gliding, giving you the chance to really get to grips with it. We present to you the IGNUS 2K17, where we shall reuse the principles of aerodynamics as applied to gliders, by implementing them to design and fabricate hand-made unmanned Balsa gliders. Flight is achieved by the interaction of a vehicle with the air surrounding it. As an aircraft moves through the air the flying surfaces deflect air downwards creating a force which can be resolved into components perpendicular to its motion i.e. lift, and parallel to its motion i.e. drag. At the same time the flow of air past the wings and body of the craft is slowed by friction and changes in pressure caused by the shape. A well-trimmed glider flies in a straight line at almost constant speed, necessarily in a slightly downward direction, by balancing the forces of lift and drag with that of its weight. All the aerodynamics is based on the *Newton's Laws of motion* & *Bernoulli's theorem*, so design of your balsa glider matters a lot.

2. Problem Statement

Design and build an unpowered glider that glides in air with the objectives of traversing maximum distance and stays in air for maximum time. Points will be awards based on design, range and maximum time of flight.

3. Event Rules and Specifications

3.1. Team Size

• A team should not exceed more than 2 members.

3.2. Eligibility

Any student can participate in this event.

3.3. Rules

1. Teams need to use only balsa wood to make their glider.

2. The glider should be hand launched, use of catapult or mechanical launch is strictly not allowed.

3. The glider should not contain any power source or propellant such as engine, motor, propeller, balloon etc.

4. The team may be provided an elevated platform such as chair or table (approx. 2.5 feet high) to launch their glider.

5. Each team may be given 1 free try (if wanted) which will not be counted for scoring. NOTE: This attempt will be given only if the participant informs about free trial to the event organizer before the launch.
6. Two trials will be given for scoring.
7. The team with the maximum possible points will be the winner.
8. Only handmade gliders are allowed to take part in the competition.
9. You and your team is responsible if the glider is lost or damaged.
10. For the point system look in judging section.
11. Points will strictly be given according to the criteria given in judging section.
12. The decision of event coordinator will be final and should be taken in best spirit by all the teams.

3.4. Specifications

1. Glider should be handmade. Ready-made models are strictly not allowed.
2. Maximum wing span allowed is 40 centimeters.
3. Maximum weight allowed depends on your choice.

4. Judging Criteria

Points distribution

1. Distance travelled
  (i) 5 pts/meter (0-7 m)
  (ii) 7pts/meter (after 7m & applicable for distance after 7m only)
2. Time of flight – 10pt per sec
3. Vertical loop – 30 pts for 1st loop, for more than 1 loop in same flight 40pts/loop (if vertical loop is more than one than 40pts/loop will be applicable for first loop also instead of 30pts for first loop)
4. Side loop= 20 pts/loop
5. Smooth Landing 5 pts. (No damage in nose or any other part)
6. Points based on design may be given based on explanation of model and will be of maximum 3 pts.
NOTE: Any loop must be fine and clearly visible. A stopwatch will be used to measure the time of flight. The duration shall include the time when the glider is launched and until it touches the ground in the first instance. The time for the motion of the glider after touching the ground once is not included. The team with greater points will be awarded superior rank.

5. Contacts of event organizer

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