AEROMODELLING CLUB
NIT ALLAHABAD

PROSANG

National Aerial Robotics Competition

A event for drone lovers and innovators aspiring for aerospace sector. we are inviting you all to build up a project on aerial robots which is capable of to be maneuvered on a specific challenged arena.

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NARC (National Aerial Robotics Competition)

Introduction

NARC is the Aeromodelling Competition . The competition involves RC aircraft with electric motors. The competition provides a platform to compete for different flyers through a series of different rounds doing different manoeuvres and showing their talent in flying like payload dropping, limbo flying and on spot landing. The competition is launched with the vision to provide a unified national platform for students interested in aerospace and related engineering disciplines - to demonstrate their aero-modelling expertise.

Event Structure

The competition requires participants to design and fabricate an RC Aircraft (no readymade aircraft like RTF, ARF, BNF etc. are permitted) and perform a set of tasks. Propellers, Motors, ESC, Servos, Receiver and Transmitter are allowed as off-the-shelf items.

The arena will be an open ground. There will be four rounds in the competition as follows:

A. Gliding
B. Upside down (Flipping)
C. Bomb Drop

A. Gliding Round:

A good measure of the design of an aircraft is in rate of climb and gliding time. In this round, participants are required to make their aircraft (without payload) to climb for **30 seconds**. After this, they need to perform a dead stick flight (throttle=0 or Gliding). The aircraft however can be maneuvered while it is gliding.The teams will be graded based on the glide time of the aircraft as mentioned below. Each team would be given **one attempt** in Gliding round.

Scoring for Qualifier Round: 10* (glide time in seconds)

B. Upside down(Flipping) Round:

In this round the participants are required to perform vertical and horizontal flips in the air .The time limit to perform flips is maximum 1 min. Both vertical and horizontal flips have different points ,furthermore you have to perform both type of flips in **1 min** (i.e separate time is not allotted for each kind of flips). Each team would be given **two attempt** in Upside down(Flipping) round.

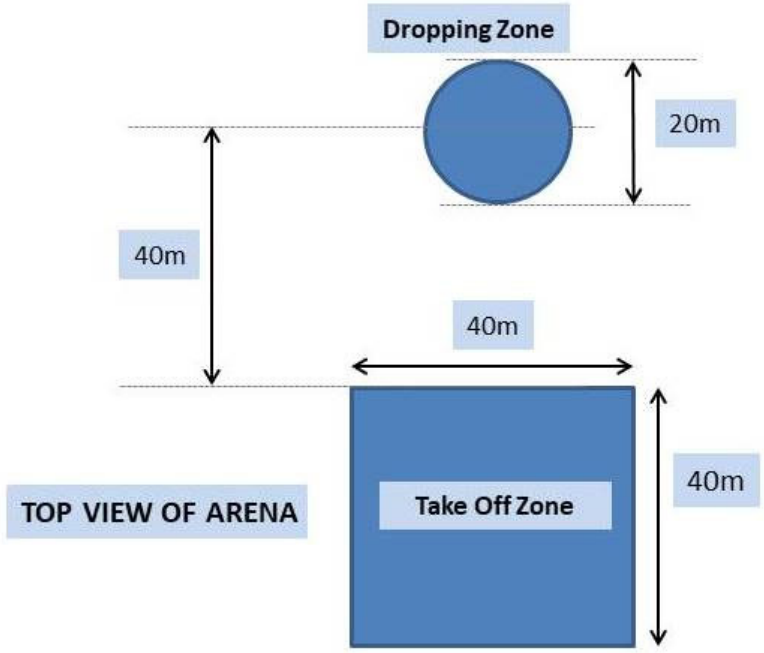
Scoring for Upside down(Flipping) Round:

50*(number of vertical flips)+100*(number of horizontal flips)

C. Bomb drop Round:

In this round, the design w.r.t. to the payload handling capability of the aircraft is put to test. The aircraft should carry one or more than one payloads (golf balls of weight - 45g, diameter - 43mm- will be supplied by the organizers during the competition) and drop them in a circular drop zone of 20m diameter. All the payloads in/on the aircraft should be released in a single drop. The payloads should fall as independent objects and should not be put together as one bigger payload (sticking them together or putting payloads into a single box etc. are not allowed). The drop zone is at a distance of 40m from the take-off and landing zone. (For a better understanding of the arena, refer to the illustrations).The participants will be given maximum of **2 attempts** and the minimum of the both attempts will be considered.

ARENA



Scoring for Bomb drop Round: 1000/(time taken to complete bomb drop)

Final Score:

Final Score = Score from (Gliding Round+ Upside down Round+Bomb drop Round)

Model Specification

1. T/W <=0.75 without payload (If excess thrust is measured, it will be neutralized by adding weight below the aircraft at center of gravity)

2. Propeller diameter should not be greater than 13 inches.
3. Total wingspan should be a maximum of 1.2 m.
4. Only electrical motors are allowed. The use of IC engines or any other means of providing thrust is prohibited.
5. Use of gyroscopes (gyros) and programming assistance in receivers is prohibited.

Rules and Regulations

Team Structure:

A team can consist of a maximum of ***4 members***.

Professional Flyers are not allowed to participate in the event.

Rules :

- There will be no trial in the first round.
- You can have a short trial of before the starting of the event.
- Each team must have its own model. Exchanging of models is not allowed.
- The landing of the aircraft will have its individual points depending on the accuracy and smoothness of landing & the respective points will be given.
- RTF models will not be allowed, however pre-programmed boards may or may not be used. Off the shelf frame and electronics can be used
- Already built frames can be used.
- No restriction on the material used in making the machine but metal propellers are not allowed.
- A team can use only one model throughout the event in all the rounds.
- The organizers reserve all rights to change any or all of the above rules.

Changes will be highlighted on the website and will also be mailed to all the registered participants. However, you are suggested to keep checking the website regularly.

Contacts

For any queries contact any of the event managers or mail us at **aeroclub@mnnit.ac.in**