



*Category D: Fly-by-Video / Automated*



# Competition Category D



- Challenge
- General Rules & Regulations
- Awards





# Challenge

To design and build a small flying machine capable of completing a series of tasks which may include flying between gaps, identifying items and precision release of consignment.

The team can choose from three different aircraft flying modes:

1. Fly-by-video
2. Semi-autonomous
3. Autonomous

[\[DETAILS\]](#)

[\[DETAILS\]](#)

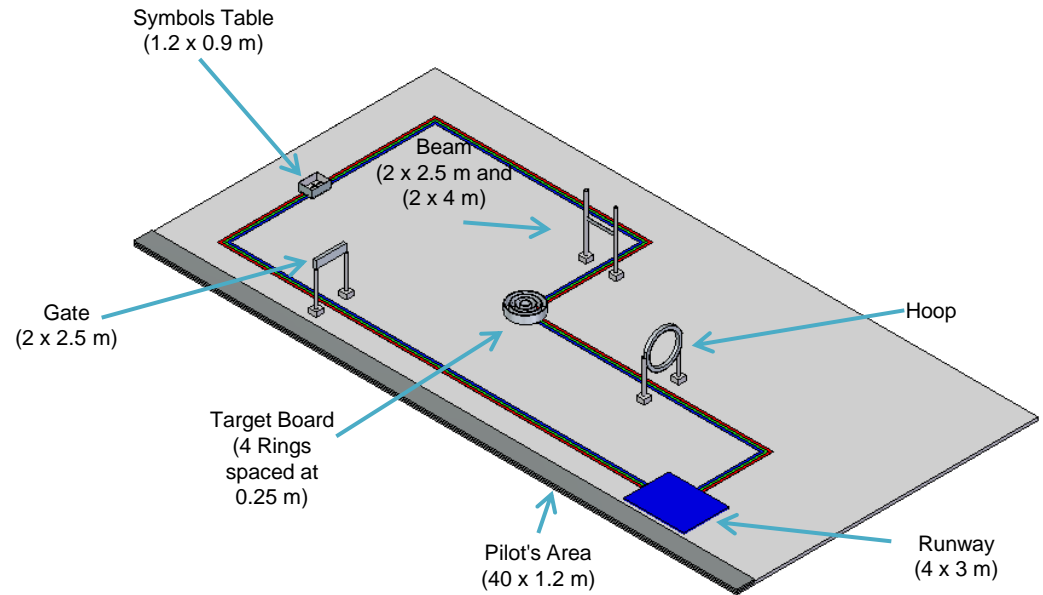
[\[DETAILS\]](#)



# Mission



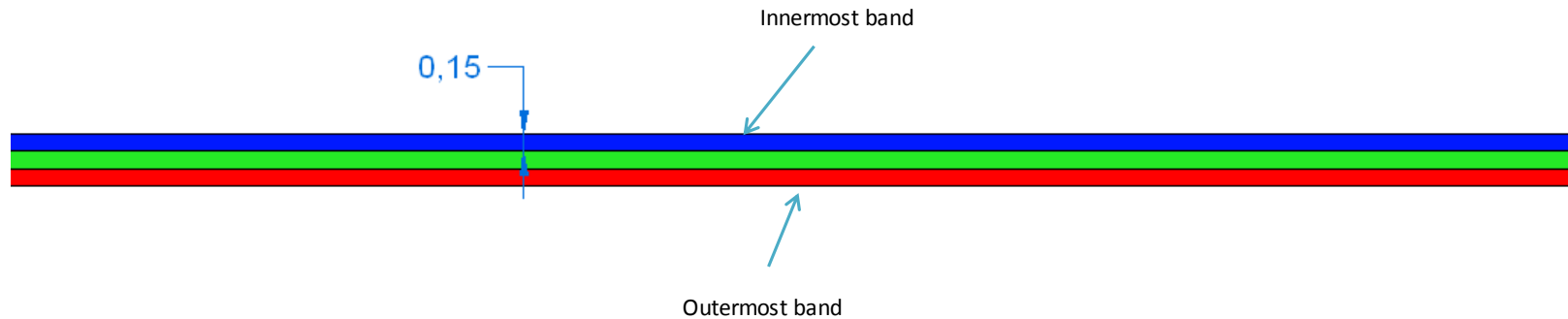
1. Take-off from runway
2. Fly through a gate
3. Identify symbols
4. Fly over a beam
5. Drop payload on a target
6. Fly through a hoop
7. Land on runway





# Ground Markings

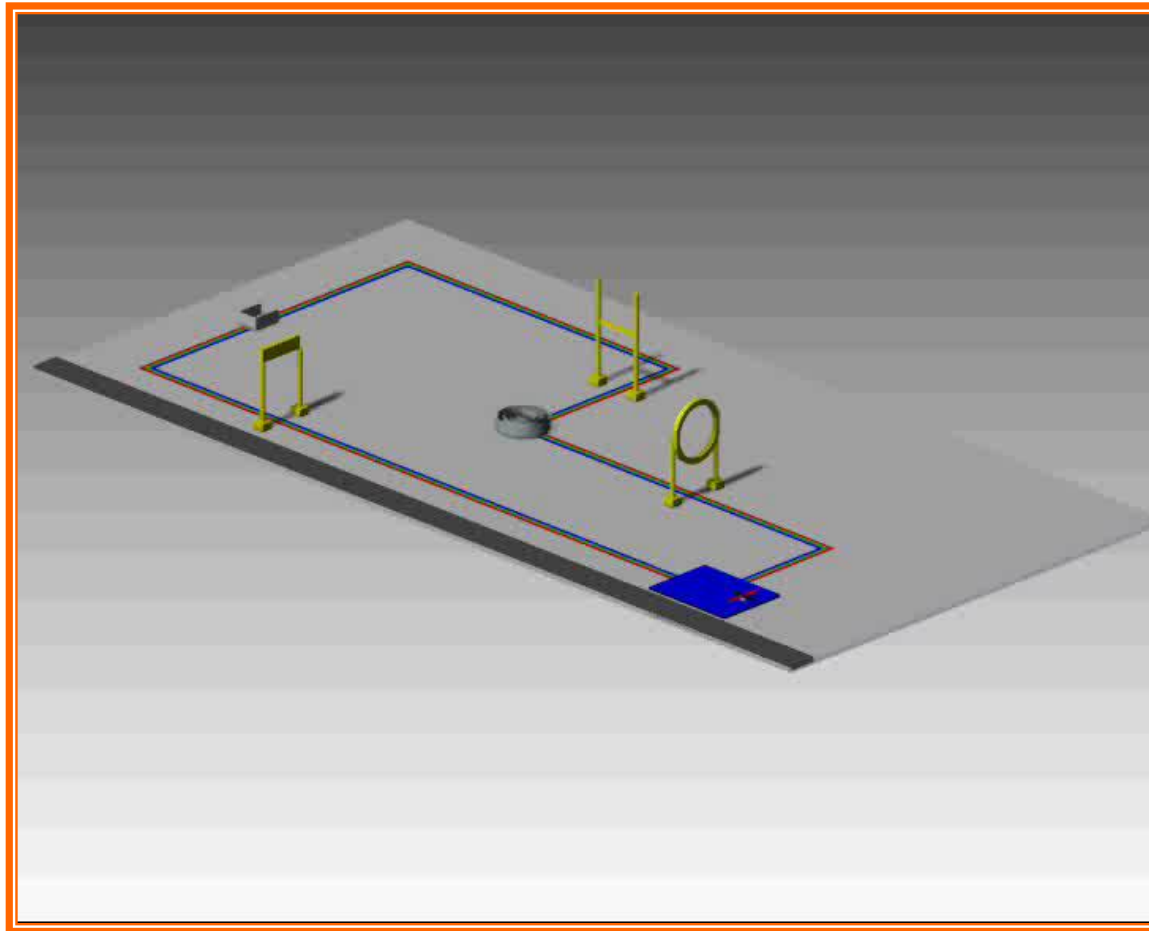
All teams may use the coloured lines on the floor of the flying field for reference



All dimensions in metres



# “Fly-through” the Mission





# Performance Score (P)

The **final** score is the **best** score between the **two attempts** and is determined by:

$$P = S \cdot A \cdot F \cdot M$$

where

S = Size Factor

[\[DETAILS\]](#)

A = Aerial Platform Factor

[\[DETAILS\]](#)

F = Flying Mode Factor

[\[DETAILS\]](#)

M = Mission Accomplish Factor

[\[DETAILS\]](#)



# Rules and Regulations (I)



- Each team two to five polytechnics or undergraduate students
- Team members must be from the same school
- Graduated students or post-graduate students are not allowed to participate
- Complete COTS products not allowed, COTS components are permitted
- Maximum Take-Off Weight < 1kg, payload **must** be carried on the vehicle
- Video transmitter and camera is compulsory
- Only electric flight
- Submit two 4R sized photo during presentation. No major changes to flying machine after presentation.



# Rules and Regulations (I)



- Only **29.700–30.000 MHz** R/C Frequency ranges are allowed (set by IDA)
- No charging of batteries within the competition hall
- Only Lithium-Polymer (**Li-Po**), Nickel Metal Hydride (**Ni-MH**) and Nickel-Cadmium (**Ni-Cd**) batteries are allowed
- No personnel allowed in the flying area, except the pilot for **semi-autonomous** mode
- No transmitter (RC, data link and video link) is allowed to be turned on without permission
- For a more complete list, please refer to the Challenge Booklet and [www.safmc.com.sg](http://www.safmc.com.sg)



# Awards



	How do I/we win that?	Weightage for the Championship Award
<i>Championship</i>	<b>Overall Champion</b>	----
<i>Performance</i>	<b>Best performance in the flying field</b>	50%
<i>Aesthetic</i>	<b>Most artistically decorated flying machine</b>	0%
<i>Creativity</i>	<b>Best innovative and original flying machine design</b>	10%
<i>Theory of Flight</i>	<b>Best knowledge in flight tests and fabrication of the flying machine</b>	20%
<i>Presentation</i>	<b>Best exhibit creativity, fluency in the presentation of their team's work</b>	15%
<i>Microsoft Flight Logbook</i>	<b>Best capture of learning journey (photos, videos, blogs etc) with Microsoft Live@edu</b>	5%

