

Learn & Fly

Learn&Fly Challenge

National and International Edition

Regulations

2019



www.learn-fly.eu



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Description

The goal of Learn&Fly Challenge is to build an aircraft with simple materials and then test its flight. The competition includes a national event in each country (AeroDays); national winners will participate in the international event (AeroWeek) to take place in Poland – Rzeszow.

The team

Each team is composed of two to four high school students and one supervisor teacher. One of the students takes the leadership role, including communication with the challenge organizer.

Registration

Participation is free. All team members must register online according to the competition schedule. See <http://learn-fly.eu/> for more information.

Aircraft Requirements

The aircraft must be an original design envisaged by the students. It is totally forbidden to use any parts taken from existing model aircraft. All produced materials, including reports, drawings and the aircraft, must be carried out by the registered students without external help. The following requirements must be fulfilled:

- The competition is limited to fixed wing aircrafts, not lighter-than-air.
 - o National competition (AeroDays): no propulsion system is allowed. The aircraft flies as a glider.
 - o International competition (AeroWeek): a propeller (nonmetallic) must be introduced in the aircraft developed for Aerodays. The only allowed propelled is the Peck Polymer with 9.5" and elastic bands as energy source (FAI Rubber Super Sport with 3/16"). The teams are free to define the length and the number of turns of the rubber. Each team must design the bearings and attachments to the model.
- Projected area of the wing must not be higher than 15,5 in² (10 dm²). The wing must be disassembled in two parts (left and right wing). Wings must be composed of several parts similarly to commercial aircrafts, including spars, ribs and skin (paint is not considered as skin).
- The fuselage must transport a payload of 0,22 lb (100 g) (provided by the challenge organiser) that can be attached with velcro strip band.
- The aircraft must withstand a drop test from a height of 4,92 feet (1,5 m) into a rigid floor (nose down). If any part disassembles, it must be reassembled in less than 5 min. If the aircraft has parts designed to break during the test (fuses), they must be clearly identified in the report.

- For design purposes consider that launching is made at a speed of 19,44 knot (10 m/s) and 6,56 feet (2 m) high.
- The aircraft must be identified at wing top with characters at least 30 mm high, displaying the following information: school name, team number, Learn&Fly logo; and position of the center of gravity with payload marked with the symbol: 
- Each team is free to select the materials to build the aircraft, considering a budget of 50 €, even if they are sponsored (full size row material). Reused materials are accounted with 50 % price reduction. Winner teams that will participate in the AeroWeek will receive from the organization the propellers, shaft and rubber.

Key Dates

Table 1 – Key dates

Task	Aeroday Portugal	Aeroday Spain	Aeroday Poland	AeroWeek Poland
Competition Launch	01/10/2018	03/12/2018	27/03/2019	12/08/2019
Teams registration	28/02/2019	03/12/2018	03/04/2019	-
Report	17/05/2019	23/05/2019	17/05/2019	15/09/2019
Oral presentation	22/05/2019	27/05/2019	22/05/2019	20/09/2019
Flight Competition	22/05/2019	27/05/2019	22/05/2019	20/09/2019

Evaluation

Projects' evaluation considers three items:

- Report (30%)
- Informal presentation of the aircraft (20%)
- Flight tests (50%)

Report

The Aerodays report can be written in the national language or in English and must be submitted in the Moodle platform. Teams participating in Aeroweek must present the corresponding report in English. A template for the report is available in at <http://learn-fly.eu/>. The team with the best report will have maximum score while the others will have proportional scores.

Informal presentation of the aircraft

Students must present the developed aircraft to the jury. The jury will evaluate the aircraft built quality, features, solutions provided, and answers to some questions. This session will take less than 15 minutes. The team with the best presentation will have maximum score while the others will have proportional scores.

Flight tests

As first, the students must demonstrate that the aircraft is able to have a stable fly without any payload. After this demonstration, the payload is added and the aircraft will be hand launched by one of the students in the team. The best launch (the longest distance travelled) is considered. Each team is allowed to do five launches and extra lunches (one more launch for each badge earned in moodle platform, by answering quizzes related to the course – in total maximum 4 extra lunches). Travelled distance is measured from the launch line to the centre of gravity of aircraft where the aircraft stops, projected to the ideal flying path (Figure 1). The team with the longest travelled distance will have maximum score while the others will have proportional scores. The drop test will be made after the flight tests and if failed is accounted as a penalty. All this applies to both national and international events.

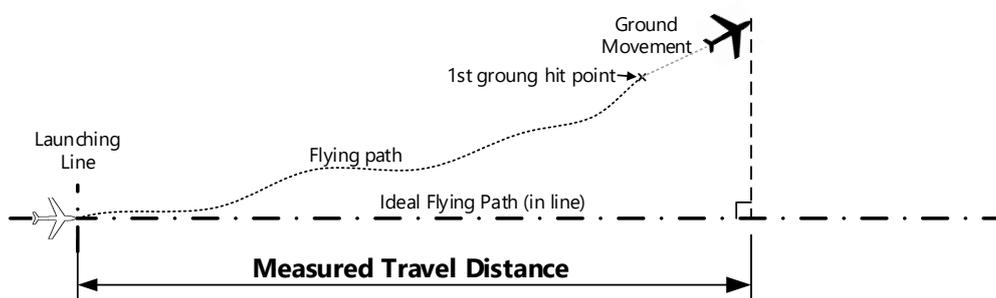


Figure 1 – Top view of aircraft launching

Penalties

Penalties are foreseen (Table 2) if the aircraft does not fulfil the technical requirements, if key dates are not respected or other unconformities are detected by the jury.

Table 2 – Penalties

Subject	Penalty (absolute value)
Delay in delivering reports or any information requested	5% / Day.
Unstated protests	Min. 5% up to disqualification
Not allowed aircraft (e.g. no fixed wing or lighter-than-air)	disqualification
Projected area of the wing being higher than 10 dm ²	10% / dm ² more
Wing does not meet the requirements	5% / each unconformity
Drop test failure or wing unconformities	10%
Identification not correct or missing	5%
Cost exceeds 50€ or not realistic	1%/€ more

Jury

Aerodays jury has at least three elements and shall include at least one of the project stakeholders. Aeroweek jury has at least six elements and shall include at least two partner representatives, two professors, one company representative and one self-government representative. The jury cannot include members that had any direct relation with the teams, such as the supervisor teachers for example.