MIL DRONE CHALLENGE 2026

Hosted by Hellenic Air Force Academy

13-17 July 2026

Competition Rules

Updated Version

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1. Competition Overview

1.1 Dates and Location

The MIL Drone Challenge 2026 will take place on a weekday in mid-July at Dekelia Air Base, within the facilities of the Hellenic Air Force Academy (exact date to be announced).

1.2 Challenge Framework

The competition consists of two main components:

- Mandatory Documentation, through which teams present their development process and unmanned aircraft system (UAS) design.
- Mission Demonstration, which evaluates flight capabilities, autonomous navigation, and operational safety.

1.3 Concept

In a simulated operational scenario, a wounded soldier is stranded in a remote area where immediate human intervention is not possible. Teams must deploy a drone to search the area, locate and identify the casualty, and accurately deliver a first-aid kit.

1.4 Team Composition

Each team may consist of up to 6 Coaches and up to 15 Cadets, all originating from the same academy. Cadets of different rankings are permitted to participate. One Coach must be designated as the Team Coordinator. There should be at least 2 cadets and 1 coach per team.

1.5 Judging Committee

The judging committee will consist of six members: two from HAFA and four selected from the participating academies. Judges are not allowed to be coaches from the participating teams. Academies wishing to contribute a judge should notify the organizers via the competition email. The four academy judges will be selected by lottery. If fewer than four academies volunteer a judge, the remaining places will be filled by HAFA. Judges will later be given a document on how to grade each team’s effort.

1.6 Timetable

The dates below are tentative and subject to change.

Event	Date
Contest Briefing (link will be circulated)	12 Jan 2026
Registrationdeadline	16 Jan 2026
Technical Reportsubmissiondeadline	5 Jul 2026
Induction Day / Contest Days / Awards Day	13-17 Jul 2026

2. Mandatory Documentation

Prior to the on-site competition, teams are required to develop and submit the following design documents via an online portal.

2.1 Technical Report

Each team is required to submit a Technical Design Report (TDR) that describes the team's approach in sufficient technical detail. The TDR must cover the design, development, testing, and commissioning phases of the proposed UAV solution. The technical design report will be defended through a presentation by the teams on-site.

2.1.1 Deliverable Requirements

The written report must include the following sections:

- Abstract
- Acknowledgements
- CompetitionStrategy
- DesignStrategy
- TestingStrategy
- References
- Test Plan & Results (Optional Appendix)

The report must adhere to the following format:

- 20-page maximum (including References and Appendices).
- Submitted in PDF format.

2.1.2 Abstract

The abstract is a concise summary of the main points of the report. It should summarize the connection between the overall competition strategy and the system architecture, design, and engineering decisions.

2.1.3 Acknowledgements

Participating in the competition involves leveraging resources and support beyond the efforts of individual team members. This support may take the form of technical advice, labor, equipment, facilities, and monetary contributions through organizational sponsorship. Acknowledging those who have supported the team's efforts is important.

2.1.4 Innovation

Given the strategy for success in the competition and the approach to managing complexity, the report must include a description of the drone's technical features. Justifications for technical choices must be clear. Teams should discuss how components and subsystems were selected. Teams must justify each component selection

2.1.5 Drone Assembly and Construction Process

This section describes the drone's assembly, including the step-by-step construction process and key technical decisions. It must include snapshots from critical assembly stages to document progress and verify correct implementation. Challenges encountered and solutions applied should be briefly noted. Overall, this section must demonstrate the drone's manufacturing process and the team's collaborative effort.

2.1.6 Drone Specifications

The report must include drone specifications as listed below. Where applicable, specifications must be supported by telemetry data.

- General Information: drone name, drone category (quadcopter, hexacopter, fixed-wing).
- Physical Characteristics: dimensions (L × W × H), weight (empty and with payload), frame material.
- Performance Characteristics (with telemetry data as proof): maximum speed, flight time without payload, maximum payload capacity.
- Power/Propulsion: motor type, battery type and capacity (mAh or Wh), autonomy, number of rotors, propeller size and pitch.
- Sensors and Navigation: GPS/GNSS, cameras (resolution, zoom, stabilization), obstacle avoidance sensors, altimeter, other sensors.
- Communication/Control: remote control type (RF, Wi-Fi, LTE), communication range (estimated).

2.1.7 References

All original ideas and content not generated by the report's authors must be properly cited. Sources should include notable technical references such as technical papers and articles. The use of source material must be evident in the TDR, and sources must be thoroughly documented.

3. Mission Demonstration

This section outlines the requirements and instructions for the Mission Demonstration during the on-site contest.

3.1 Drone Operators

During the Mission Demonstration, each team can have max 5 operators on-site; up to two can be drone pilots, and the rest will be at the Ground Control Station, responsible for manual flight and autopilot operation respectively. Further, if any, team members may assist with drone setup before Mission Time begins but may not assist the operators during the mission. If the drone falls, all team members are permitted to assist with repositioning for a retry. No coaches are allowed to assist operators during the Mission Demonstration.

3.2 Mission Time

Teams are allocated 30 minutes to complete the mission. Prior to starting Mission Time, the Lead Judge will ask the team to identify the operators and will then hand over the delivery objects for the drop-off. Waypoints will be provided to each team on a USB drive during Check-In at the academy.

Mission Time begins at takeoff (prior to Challenge 1) and stops when the drone has landed at the launch pad (after Challenge 2). If the time limit expires, the team must immediately terminate the attempt and land the drone. Within the 30-minute window, each team is permitted to change the battery once if needed . Please note that timer will not pause in this case. Bonus points are awarded to teams that complete the mission ahead of time (see Section 5.3).

3.3 Flight Performance Requirements

The Mission Demonstration will take place in a track-and-field stadium. Both VTOL and HTOL drones may participate. Takeoff and landing procedures may be performed manually or autonomously. Within specified regions, only autonomous flight is permitted. If the pilot assumes manual control of the drone while it is inside the designated autonomous flight area, a penalty will be applied as described in Section 5.4.

3.4 Ground Control Station Requirements

Teams must maintain a display that is always visible to the judges. The display must show the UAS position, ground speed, and AGL altitude at all times. If the display is not viewable by the judges before the mission, the drone will not be permitted to take off. If the same problem occurs during the flight, the timer stops, the drone must land, and the team will be permitted to restart the challenge from the beginning, with the timer resuming from the point it was paused.

3.5 Challenge 1: Waypoints

Teams will be given a sequence of waypoints to navigate through autonomously. Each waypoint zone has a diameter of 3m (cylindrical shape), and 10 waypoints will be defined. The pass-through sequence does not affect scoring, and teams are not required to pass all waypoints. GPS coordinates of the waypoints will be provided to teams on Induction Day. Two extra static obstacles will be present on-site. The flight altitude for this challenge is up to 10 m AGL. At the end of the Mission Demonstration, each team must submit to the committee the USB flash drive containing the flight log file of the traversed waypoints.

3.6 Challenge 2: Search, Detect, and Deliver

The drone must deliver a payload to an injured person (a mannequin) that it detects autonomously. The flight altitude during this challenge must be between 20 and 50 m AGL. A red fabric measuring 2 × 1 m will be placed on the ground to improve visibility and identification of the mannequin.

3.6.1 Area of Search

The search area will be announced to participants through a coordinates file distributed on Induction Day.

3.6.2 Delivery Requirements

The delivery package will consist of a small torch (70–80 g) and an isothermal emergency blanket (90 g). Each team must provide its own mechanism to secure these objects, as they will not be supplied in any container. This package can be loaded on the drone whenever the team desires to do so, without any penalty. It must be dropped within a radius of 10 m of the mannequin position and a measuring tape will be used to calculate the distance from the center of the circle to the final resting position.

3.6.3 SOS Location

After delivering the first-aid kit, the drone must save the GPS coordinates of the injured person and capture an image that includes the surrounding area and clearly depicts the injured person. This information must be submitted to the judging committee at the end of the team's attempt via USB. The accuracy of the recorded location and the quality of the image will both be evaluated (see Section 5.2.2).

4. Required Specifications

Teams must design and build their drone in accordance with the following specifications.

4.1 Drone All-Up Weight

The maximum permitted all-up weight (AUW) of the drone, inclusive of all onboard delivery objects as provided before the Mission Demonstration, is 10 kg. This includes all batteries, payloads, and systems in maximum takeoff configuration. A weigh-in will be conducted before the Mission Demonstration. A lighter drone results in a higher bonus score as described in Section 5.3.

4.2 Drone Volume

The maximum allowable (fully deployed) drone dimensions are 1 × 1 × 1 m. Each team must decide whether to transport their drone by airline, which may require disassembly to comply with airline size restrictions, or to ship it via courier service.

4.3 DroneSpecifications

- Maximumnumber of rotors: 6.
- Telemetry is mandatory: must transmit real-time location, altitude, and battery level to the GCS.
- Autonomous flight is mandatory within the specified regions.
- Manual control capability is required in the event of autonomous system failure.
- Obstacle avoidance capability is required.
- Allowed drone types: quadcopter, hexacopter, or fixed-wing.
- A drop-off release mechanism is required.
- At least one onboard camera is required.
- FPV capability is not mandatory.

4.4 UAV Design Flexibility

A team may compete using a UAV built from scratch or a pre-existing platform that has been modified. If a previously existing UAV has been modified, the team must still document all components in the Technical Design Report as required. However, a modified pre-existing platform will be scored lower than a UAV built entirely from scratch, as determined by the judging committee.

4.5 Drone Flight Permit

Every Safety Pilot is required to hold a flight permit appropriate for their drone category prior to the competition.

5. Scoring and Penalties

The total maximum score achievable is 1,000 points, distributed across Mandatory Documentation, Mission Challenges, and Bonus Points. Penalties are deducted from the accumulated score. The sections below define every scoring criterion, its point value, and the precise method of evaluation.

5.0 ScoreSummary

Category	MaxPoints
5.1 MandatoryDocumentation	300 pts
5.2 Mission Challenges	700 pts
5.3 BonusPoints	(variable)
5.4 Penalties	(variable)
TOTAL (base)	1000pts

5.1 MandatoryDocumentationScoring — 300 Points

Mandatory Documentation is evaluated prior to the on-site event. It comprises two components: the Technical Design Report (TDR) and the Flight Readiness Submission.

5.1.1 Technical Design Report (TDR) — 300 Points

Criterion&EvaluationMethod	Points
A. Formatting& Professional Presentation	**20 pts**
Full marks (10 pts): Document is within the 20-page limit; all required sections are present and clearly identifiable; professional layout with consistent fonts, headings, and spacing; zero grammatical, punctuation, or spelling errors. **Partial marks:** 15-20 pts: Minor formatting inconsistencies or isolated language errors. 7-14 pts: Page limit exceeded by up to 2 pages, or sections difficult to locate. 0-6 pts: Major formatting failures, multiple missing sections, or pervasive language errors.	0–20
B. Abstract	**20 pts**
17-20 pts: Abstract is engaging, clearly defines the scope, and provides a thorough summary of strategy, system architecture, and key engineering decisions. 10–17 pts: Summary is present but omits scope or key design decisions. 0–9 pts: Abstract is absent, too brief, or does not reflect the report's content.	0–20
C. Acknowledgements	**10 pts**
10 pts: All supporting personnel, institutions, sponsors, and their specific contributions are individually acknowledged. 5–9 pts: Acknowledgements are present but generic, or one category	0–10

Criterion&EvaluationMethod	Points
of contributors is missing. 0–4 pts: Section absent or acknowledges only one person/group superficially.	
D. Technical Features&Innovation	**150 pts**
This is the highest-weighted criterion in the TDR. Judgeswillassess: • Depth of design strategy explanation (selection rationale for components and subsystems) • Evidence of a Systems Engineering approach (requirements → design → verification) • Creativity and novelty of technical solutions relative to the mission objectives • Clarity of explanations — judges must be able to fully understand the system from the report alone **Scoring bands:** 120–150 pts: Exceptional depth; clear innovation; full SE approach; all subsystems justified. 80–119 pts: Good depth; some innovation; partial SE approach. 40–79 pts: Surface-level explanations; limited innovation; design decisions mostly unjustified. 0–39 pts: Minimal technical content; no visible engineering methodology.	0–150
E. Drone Assembly & Construction Process	**25 pts**
Sub-criteria: Completeness of description (0 pts): Step-by-step process is fully documented including key technical decisions and challenges encountered. Clarity of visual documentation (10 pts): Assembly snapshots are included for all critical stages and are clearly labelled. Teamwork evidence (5 pts): The report demonstrates collaborative effort across team members.	0–45
F. DroneSpecifications	**20 pts**
25-30 pts: All mandatory specification categories are present, complete, and supported by telemetry data where required. 10–24 pts: Most categories present; minor omissions in data or evidence. 0–9 pts: Multiple specification categories missing or unsupported.	0–30
G. References	**15 pts**
20-25 pts: All non-original content is cited. Sources include peer-reviewed papers or reputable technical documents. Citations are clearly linked to content in the report. 10 –19 pts: Most sources cited; minor inconsistencies in citation format. 0–9 pts: Few citations, or sources are not technical in nature.	0–25
TDR TOTAL	**300 pts**

5.2 Mission Challenges Scoring — 700 Points

Mission Challenge scoring is assessed live during the Mission Demonstration. The judges monitor performance in real time, and all scoring decisions are final unless a formal dispute is submitted within 15 minutes of the attempt's conclusion.

5.2.1 Challenge 1: Waypoints&Obstacles — 300 Points

Criterion&EvaluationMethod	Points
Waypoint Pass — per waypoint successfully traversed A waypoint is counted as successfully passed when the drone's GPS position is recorded within the 3 m radius of the designated coordinates. Up to 10 waypoints are available. The sequence of traversal does not affect scoring; teams are not required to pass all waypoints. If the drone passes through a waypoint at an altitude greater than 10m, the respective points will not be awarded **Score = (number of waypoints passed) × 20 pts**	20 ptseachMax 200 pts
Static Obstacle Avoidance — per obstacle successfully avoided Two static obstacles are positioned within the waypoint area. A team receives points for each obstacle that the drone navigates around without contact. Contact with an obstacle is defined as any physical touch detected by the judges. **Score = (number of obstacles avoided) × 50 pts**	50 ptseach Max 100 pts
CHALLENGE 1 TOTAL	**300 pts**

5.2.2 Challenge 2: Search, Detect & Deliver — 450 Points

Criterion&EvaluationMethod	Points
Payload Delivery Accuracy The distance from the dropped package to the mannequin position is measured after the drop. Scoring is as follows: ≤ 10 m from target: Full 200 pts awarded. > 10 m from target: Teams are ranked by proximity (rank 1 = closest). Score = (N − i + 1) * 100 / N pts, where N = total number of teams (whose package landed >10m) and i = rank of the team. Teams that fail to release the payload receive 0 pts for this criterion.	0–200 pts
SOS Location Accuracy Teams submit the GPS coordinates of the mannequin at the end of their attempt. The coordinates are compared against the ground-truth mannequin position. d= sqrt($\Delta x^2 + \Delta y^2$) Scoring follows a ranked formula: Score for team i = (N − i + 1) * 140 / N pts where N = total number of participating teams and i = rank of accuracy (1 = most accurate). The team with the smallest positional error receives the full 150 pts. No submission equals to 0 pts.	0–140 pts
Casualty/drop-off confirmation Image Quality The team must submit one still image captured during Challenge 2. Judges evaluate the image on the following equally weighted sub-criteria (20 pts each): • Visibility of the injured person (mannequin clearly identifiable) • Framing (mannequin and immediate surroundings are in frame) • Sharpness and focus Only one image is accepted. If multiple images are submitted, the committee will evaluate the first image that was taken.	0-60 pts

Criterion&EvaluationMethod	Points
CHALLENGE 2 TOTAL	**400 pts**

5.3 BonusPoints

Bonus points are awarded in addition to the base 960 points. They cannot be used to recover penalized points.

BonusCriterion	BonusPoints
Mission Completion Speed Awarded to the three teams that complete both challenges (land drone at takeoff point) in the shortest time. Bonus is assigned at the close of all attempts. 1st place: +80 pts | 2nd place: +50 pts | 3rd place: +25 pts	+25 to +80 pts
Drone Weight Efficiency Awarded to every team whose drone (all-up weight with payload) is below the 10 kg limit. Weighed during pre-mission check-in. Bonus = (10 − AUW in kg) × 10 pts Example: A drone weighing 7.5 kg earns (10 − 7.5) × 10 = 25 bonus points. Drones at or above 10 kg receive 0 bonus points and may be subject to a penalty (see Section 5.4).	Up to 100 pts (formula-based)

5.4 Penalties

Penalties are deducted from the team's total accumulated score. A team's score may not fall below 0 as a result of penalties. Judges apply penalties in real time; penalty events are logged in the official score sheet.

PenaltyEvent	Deduction
Late Mandatory Documentation Submission TDR submitted after its deadline.	−80pts
Unauthorized Manual Control in Autonomous Flight Area Applied each time the Safety Pilot switches to manual control within a designated autonomous flight region. The penalty is applied regardless of whether the manual intervention was necessary. The penalty within the designated autonomous region will be applied at a 10-second interval (0-9sec -> 80pts, 10-19sec-> 160pts, etc)	−80 pts per switch or every 10 seconds
Exit from autonomous flight region The penalty will be applied each time that the drone exits the designated autonomous flight regions during the challenges. In this case, manual control should enable to reposition the drone in the region and continue the challenge (manual control penalty will not be applied, timer will not be paused)	-100pts
Drone Crash / Fall If the drone crashes or falls below 20m (for challenge 2), the team may reposition and retry. Each team is allowed one retry per challenge (maximum 2 retries total). Teams may use an identical backup drone. The penalty is applied for each failure event (not per retry used).	−100 pts per failureevent
Failure to Land at Designated Airfield The drone must land within the takeoff/landing zone at the conclusion of its attempt. A landingoutsidethiszoneincurs the penalty.	−50 pts

Non-Compliant Drone Specifications Applied for each individual specification requirement (Section 4) that the drone fails to meet, as verified during pre-mission inspection. Repeated for everydiscretebreach.	−100 pts per breach
Failure to Present TDR A team that does not deliver the mandatory TDR presentation on-site incurs this penalty.	−100 pts

In case of a tie in the final standings, the winning team will be determined by the higher score in Challenge 2.