Frequently Asked Questions

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C-UASC (CSU California Unmanned Aerial Systems Competition at Mojave Air & Space Port)

Q-1. Does a pilot need a remote-pilot license/certificate such as Part 107? Are FAA 'TRUST' certifications sufficient?

A-1. The competition encourages each team to have a pilot with FAA Part-107 remote pilot certification. The Mojave Air & Space Port requires this certificate so that if a team does not have a certified pilot, the competition will provide one. The competition's certified pilot will provide direct supervision of the team's remote pilot during their flights. The competition will require each member of the pilot team have a FAA Trust Certificate.

So, in summary:

- Each Team MUST have pilots with FAA Trust Certificates
- If a team does not have a FAA Part-107 certified pilot, the competition will provide one to supervise the above mentioned Trust-certified pilots during their flight.
- <u>Become a Drone Pilot | Federal Aviation Administration (faa.gov)</u>.

Q-2. Do Drones have to satisfy the FAA requirements for Remote Identification of Drones? <u>Remote</u> <u>Identification of Drones | Federal Aviation Administration (faa.gov)</u>

A-2. Yes.

Q-3. Are Part-time Community College Students eligible for the competition?

A4. Yes.

Q-4. Are there any points awarded for Obstacle Avoidance.

A-4. No, there are no points awarded for Obstacle Avoidance. While certainly each flight needs to avoid crashing, the competition will not create obstacles for the UAS to avoid and there will be no score kept for obstacle avoidance.

Q-5. Is there a weight limit?

A-5. Yes, we plan to operate under rules specified in FAA Part 107. As a result, "Small unmanned aircraft means an unmanned aircraft weighing less than 55 pounds on takeoff, including everything that is on board or otherwise attached to the aircraft."

Q-6. What are requirements for provisions for loss of communications with the UAS during flight?

A-6. Mojave Air & Space Port requires that each team must provide a plan for lost link, loss of control, or loss of communication with the UAS during flight.

Q-7. The website says rules for 2025 will be posted soon, and the current rules seem to have some information TBD. When will official rules for the competition be posted? The current rules (from 9/5/24) contain some lines that say "_____ is forthcoming" - when will this information be provided?

A-7. The rules posted on the website are official. There remain a few items that are being finalized, for example the definition of the package in the package drop event, the maximum impact imparted to the package in the package delivery event, and the specific descriptions of the targets in the target localization event. The competition will endeavor to post these final bits of information by November 22, 2024. We will also go through the rules to catch any typographical errors. We welcome questions and constructive comments about the rules to make them as clear as possible.

Q-8. In previous years our team has been asked by SUAS organizers to send a volunteer media team, which takes photos of every attending team and the competition and also produces a short highlight video. Would C-UASC be interested in this?

A-8. The C-UASC organizers encourage teams to promote the event. We will take some photographs and may have some local media, but teams are welcome to bring their own too. There are some limitations regarding photographs at the Mojave Air & Space Port, but these are designed to protect the privacy of the companies and guests at the facility and should not pose any significant impact to photographs a team will want to take of our event.

Q-9. One task our team was very excited about from the SUAS competition rules this year was the mapping task, in which the UAS takes images of an area and stitches together an aerial map. This is of particular interest because software-focused requirements have largely remained the same over the last several years (autonomous flight, GCS, object detection, classification, and localization). Would C-UASC consider adding this task to this year's competition?

A-9. We have 4 tasks presently. 1. Waypoint Navigation, 2. Package Drop, 3. Package Delivery and 4. Identification, Classification, and Localization. These will make up the primary event. We have been thinking about adding an additional "special event/task" and would be delighted to talk about it.

Q-10. Is there a limit on how many additional guests a team can bring to the competition?

A-10. There is no limit on the number of competition guests. We may need to make some provision for meals we provide, so it will be important for the guests to register. For safety purposes, we limit the number of members on the Competition Team to be at most 12.

Q-11. What will the package for Package Delivery be? Can we get approximate dimensions/weight? Will we be provided the geolocation of the target?

A-11. The package for the Package Delivery task will be very similar to the one defined for 2024 which is posted on the website. The length along each side is 10cm (not 9cm as labeled in the drawing). This will be updated, along with the rules, in November 2024.

Q-12. Can you confirm how many total flights there are to complete all missions?

A-12. We envision one flight per task. So each team will have 4 flights. Time permitting, after every team has flown, we may allow teams to take one additional flight to improve a score.

Q-13. Are there any penalties/restrictions on what can be attached to the "beanbag" / payload? Will we be allowed to retrieve any attached items after package drop & delivery?

A-13. There only restriction is that the attachment must be safe and the UAV, along with the attachment and payload fit within the mass constraints.

Q-14. The rules state that the specific shape of the targets is forthcoming. When that information is released, will it also include things like number of targets, shapes/colors, and the region where targets will be?

A-14. This question overlaps with Q-7. We plan to update the rules in November.

Q-15, One of the scoring metrics is waypoint navigation, specifically the error between waypoints and closest point on UAS path. Will our GCS/some system be required to calculate and store these values so that they can be provided to judges, in addition to simply showing the GPS data of the UAS during the flight?

A-15. The competition will collect the flight data log recorded by the team, after the flight. We will calculate the deviation from the prescribed waypoints.

Q-16. Will we be provided information about where the airdrop spot will be located within the geofence?

A-16. Teams will be provided an approximate location for the targets for the package delivery and package drop. The teams must rely on the capabilities of their UAS to determine the precise location.

Q-17. From speaking with last year's team, I learned that proximity to the airport posed significant challenges for radio communication during the event. After discussing this with my professor, he suggested that the powerful air traffic control signals from the airport may have been a key factor in causing interference.

A-17. There were suspicions about radio-frequency interference in 2024. Not every team experienced this. Still, it seemed possible, so the C-UASC organizers are preparing to do a field survey measurement in the coming months and will report our findings.

Q-18. A few specific questions: Will there be an update to the payload cube and what is the weight? Is the multicopter allowed to descend to deliver the package? Are there object avoidance requirements?

A-18. There is some overlap here with Q-7. The package definitions will be updated in November. The payload cube is 10cm along each edge. The multicopter is allow to descend to deliver the package; the Package Delivery event measures impact force and accuracy within an allowed flight time. The Package Drop measures accuracy and flight time, but not impact force. There are no object avoidance requirements as part of a task – but certainly there are as part of the safety plan. Each UAV must avoid the buildings, aircraft, vehicles, equipment and people at the airport.