



Small Unmanned Aerospace System (sUAS) Challenge
Experimental Aircraft Association Air Venture
July 19-26, 2015

RULES v.1.2

Embry-Riddle Aeronautical University (ERAU) will hold a sUAS Challenge during Air Venture July 20-26. The event will take place inside the netted Experimental Aircraft Association (EAA) Drone Cage from 3:00 p.m. – 5:00 p.m. daily using quadcopters supplied by Hobbico and Multicopter Warehouse. The event is open to the public, ages 10 and older, on a first-come first-served basis and is limited to 15 participants per day. Each day will be treated as its own competition. Participants may register for the competition prior to the event by returning a completed registration form via email to thirtyad@erau.edu, or the day of the event at the Embry-Riddle Experience display spanning booths 49, 50, 59, 60 and 61 at Air Venture. EAA will award daily prizes and trophies to the top finisher.

GENERAL

Each competition will begin with a mandatory operators' meeting at 2:30 p.m. to brief safety, participant order, rules, and contingencies. All operators must be present to participate in the day's events. All operators will be required to sign a liability waiver prior to entering the Drone Cage (children under 18 must be accompanied by an adult). The Cage will be configured with either an obstacle course or a speed course. No practice time is expected but may be requested if time permits.

Unmanned aircraft will be supplied for competitors by Hobbico and Horizon Hobby, LLC, and will be either a Blade 180QX HD or a Dromida Ominus. All competitors will compete with the same type for each day; however, the type of quad will change daily (i.e., only like-type will compete against each other). The aircraft will be flown as-is, out of the box with no modifications.

Each day's competition will consist of two phases: qualifications and finals. Each participant will have 4 minutes inside the Drone Cage to establish his/her best time through the course. Qualifications will be flown one aircraft at time. Multiple attempts can be made during qualifications and the best time will be used to determine the four finalists. The Final Four will fly a 1-vs-1 elimination bracket to determine the overall champion. Two participants will fly

head-to-head during each final's race. The final two participants will compete in a two-out-of-three championship Cage match.

All races will begin from a designated starting point with motors off; races end when the aircraft completes the course and first touches down in the designated landing circle. The operator must remain inside the operator's zone (middle of course) for the entire run except during malfunctions/crash recovery. The intent is for the sUAS to remain outside the operator's zone with the operator inside. The head judge, at his discretion, may disqualify a contestant for safety violations at any time. If an aircraft impacts the ground or object and cannot be flown from its present position, the operator may elect to reposition the aircraft within three feet of its resting point and continue the course, or return the aircraft to the starting point and begin a new attempt. If an aircraft is deemed "unrecoverable" or "not airworthy" due to the operator's actions (e.g., a crash that damages the quad or it is stuck in the net), the operator may not make another attempt. Qualification times will only be valid if all obstacles are successfully navigated, in correct order and direction, and completed during the competitor's 4 minutes. The head judge will be stationed outside the operator's zone and will be the final authority on all matters.

COMPETITION PHASES

Qualification:

Each participant will have 4 minutes inside the arena to establish his/her best, one-lap time. There may be multiple attempts at the course within the allotted time period (i.e., the course may be attempted more than once). If the course cannot be completed in the allotted time, due to aircraft malfunctions beyond the operator's control, the operator may be offered another opportunity at the end of the order, time permitting. A 5-second penalty will be assessed for each contact with an obstacle the ground or any other object (30 seconds maximum penalty). During some circumstances, the head judge may freeze the competitor's time in the Cage to take care of unforeseen situations. The top four qualification times will move on to the finals. If the fourth and fifth best times are within 0.5 seconds, a fly-off will take place to determine the last slot for the finals. If a fly-off is required, the operator with the fifth-place time will fly first; fly-offs will consist of one lap with the best time (no restarts permitted).

Finals:

The Final Four will compete via an elimination bracket in a 1-vs-1 format. The first and fourth qualifiers, and the second and third qualifiers, will compete in the semifinal races. Both competitors will remain inside the operator's zone unless both aircraft are in an unrecoverable



state (e.g., if one aircraft strikes an obstacle and lands inverted on the ground, the other competitor will continue the course; the grounded pilot may not retrieve his/her aircraft). If both aircraft become unrecoverable, the operators may manually place their aircraft within three feet of the resting point and resume flight when the judge restarts the race.

No intentional blocking or interfering with the other operator is allowed. There is **no** penalty for contact with the ground or an object during finals as there was during the qualification phase. The race will consist of two laps through the course; all obstacles must be successfully navigated.

SAFETY

As with all aircraft operation, safety is paramount. All operators will wear eye protection inside the Drone Cage and will never approach, or handle, an aircraft while the propellers are turning. If, at any time, an aircraft maneuvers in an uncommanded fashion, the operator will position the throttle to "off," leave the aircraft where it lands, and immediately exit the EAA Drone Cage. If any participant or bystander identifies a safety hazard, he/she must immediately report it to an EAA or ERAU official.

Weather is the biggest threat to the sUAS Challenge. If the observed, sustained winds are greater than approximately 10 knots, or it begins to rain, the challenge may be delayed or cancelled for the day. If a cancellation occurs, participants may sign up for the following day, space permitting.

Notes:

Participant requests to fly personal aircraft through the course for demonstration purposes may be granted on a case-by-case basis.

For questions and/or rules interpretation/suggestions, please contact Assistant Professor David Thirtyacre at thirtyad@erau.edu or 702-994-0280

EAA and ERAU reserve the right to change any and all aspects of the sUAS Challenge at any time without notice.