



Commercial sUAS (Drone) Competition 2021 State Fair

9/14/2021

DATE: Tuesday, September 28, 2021

TIME: 10:00 a.m. Registration
10:30 a.m. Contest starts
12:00 p.m. Contest Ends
2:00 p.m. Awards

PLACE: State Fairgrounds at The Meadows in Doswell, VA, Caroline County

COMPETITION CHAIRMAN: Victoria Carr
Xelevate Unmanned Systems Center of Excellence

SCOPE OF THE COMPETITION:

Student teams will need to be able to prove competency in the ability to operate sUAS in a safe and effective manner as a flight team and document appropriately. The teams will be given three scenarios and asked to plan, fly, collect data, communicate, and document based on industry-generated scenarios. Students should have a good understanding of how an sUAS operates and flies as well as all regulations and safety protocol and procedures. Students will be required to prove their skill and competency while flying on a live video feed.

SAFETY STATEMENT:

All entries must present at registration, the attached Safety Statement signed by students and advisors. Safety glasses required. Designated school officials will be responsible for safety, protocols, and liability for all flights.

CONTEST GUIDELINES:

- Teams must be composed of two students.
- All teams are expected to adhere to the official rules for the drone competition.
- Teams are required to utilize their own computer and video equipment, unless it is provided by the host location.
- It is anticipated that teams will practice the skills needed to become proficient at the skills listed in the competition standards.
- The competition course layout be released the day of the competition.

SKILLSUSA VIRGINIA WILL SUPPLY:

- Awards

COMMITTEE WILL SUPPLY:

- Arena
- Field elements
- Judges sheets

TOOLS AND MATERIALS REQUIRED BY CONTESTANTS:

- Fully assembled, tested, and operational drone with onboard camera
- Eye protection (always required in the contest area)
- One-page résumé per competitor that will be submitted as a hard copy to the Technical Committee chair during the debrief
- Official SkillsUSA® polo or uniform

Skills/Competencies to Be Tested by the Contest

- Students can prove knowledge and understanding of FAA regulations.
- Students can safely plan and both manually and autonomously fly small unmanned aircraft system (sUAS; drone) equipment and collect usable data as required.
- Students can store, organize, and deliver/communicate data in an acceptable manner based on industry standards.
- Students can demonstrate and document a valid sUAS operational cycle.
- Students can utilize knowledge and information to troubleshoot repairs for an sUAS.

Academic Skills Expected of Competitors in this Contest

Presentation and communication, programming and flowcharts, technical literacy, critical thinking and problem-solving, spatial orientation, accessing and analyzing information, situational awareness, agility and adaptability, safety and social responsibility, environmental awareness, systems thinking, innovation and creativity, attention to detail, applied mathematics, applied science, emotional intelligence.

Technical and Safety Guidelines

Airframe: There are no limitations regarding the design of the sUAS airframe; small, medium, large sizes as well as different shapes and configurations are all welcome. Drones heavier than 3.5 pounds are not permitted in the competition unless special permission is granted.

Number of Rotors: There are no limitations to the number of rotors that may be employed on the sUAS airframe.

Maximum Motor Power: Any brand motor is welcome to be used so long as it has a can size no greater than 2312 (size of magnetic stator in millimeters) and power of 2,800 kV (1,000 rpm per volt). Both can size and power should be etched on the outside of the motor housing. If it is not listed on the motor, please bring the motor manufacturer's specifications with you to the competition; these are typically found on the manufacturer's website. See the following diagrams for more information.

Propeller Specifications: Propellers with a maximum length of 5 inches with a blunt edge are allowed in the sUAS competition. Fingers, face, hair, clothing, and other bodily objects must be kept away from the propellers at all times. Safety glasses must be worn any time a propeller is in operation.

Safety Guards: Each rotor, no matter how many have been employed, must be protected and enshrouded by a safety guard that is capable of keeping the outside edge of the propeller from making contact with anything while in operation.

Safety Glasses and Harmful Objects: Safety glasses must always be worn inside and around the field of play. No sharp objects or drone appendages that could potentially cause harm or damage to a person, objects, or playing field are allowed.

Containment Arena: If the host location does not utilize a containment arena, then no additional students should be permitted in the competition area during flight. All adults in the area must wear safety glasses at all times.

Minor Violations: The contest judges will assign minor violations as specified if an infraction occurs. They may assign additional violations, which have not been listed, per their discretion, related to sportsmanship, integrity, respect, safety, and so on. A first minor violation is a written warning, a second minor violation is a 50-point deduction, and a third minor violation is team disqualification.

Major Violations: The contest judges also have the authority and discretion to disqualify a team for any single major violation that relates to putting others' safety at risk. **NEVER OPERATE sUAS OUTSIDE OF THE EVENT CENTER OR COMPETITION COURSE AS DOING SO WILL RESULT IN IMMEDIATE TEAM DISQUALIFICATION.**

ENTRY FEE: \$20.00 per contestant entering the competition. Please register on-line at www.skillsusava.org, go to Event, State Fair and then to Competitions.

DEADLINE: Schools must register the number of teams by September 20, 2021. Contestant names must be submitted to the by September 20, 2021. Substitutions may be made the day of the competition.

- *[Participants must have a Student Competition Ticket to enter the Fairgrounds unless they are already at the Fair for another competition.](#)*
- *[Teachers are responsible for ordering tickets online directly from the State Fair Ticket Office using a State Fair Student Competition Ticket Order Form, which can be found on-line at \[www.skillsusava.org\]\(http://www.skillsusava.org\) under 'State Fair'](#)*
- *State Fair tickets **MUST** be ordered online so everyone may enter near contest site. (Gate 2) You will be allowed to park in this area with advance tickets. No picking up tickets on site.*