DRONE ZONE COMPETITION

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RULES

FOREWARD

This contest is limited to five entries per school.

Each school MUST complete a Fair Registration/Competition Entry Form and return it to the Oklahoma Engineering Foundation Office (OEF) office by February 17, 2021. Prizes will be awarded to winning entries from registered schools (entries from unregistered schools will NOT be eligible for prizes).

OBJECTIVE

Prior to competition, the goal is to design and build an obstacle course to fly and maneuver an Unmanned Aerial Vehicle (UAV) or drone through the course as fast and as safely as possible. The drone you use can be one that you have purchased or it can be one that you have designed and created on your own.

DESIGN STATEMENT

Each entrant / team is responsible for creating an obstacle course which allows your drone to fly over a structure, through a structure, and under a structure. There must be an obvious start and stop location. Participants can purchase a drone or build one from scratch. The obstacle course and drone will be judged by:

- Creativity
- Obstacle Difficulty
- Ability to employ (3) safety mechanisms
- Ability to hover drone, as well as ability to maneuver over, through and under obstacles
- Complete course within a 5-minute time limit
- Extra points given to those participants who design/create their own drone'

For those participants that opt to create their own drone, a Parts List must be provided. This list should indicate the source, cost, and fabrication operations for the drone.

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MATERIALS and RESTRICTIONS

Costs in materials in constructing a drone is restricted to a $250.00 or less per drone (this does not include an FPV (first person video). Common vendors for purchasing drone kits include – Amazon, Hobby King, Get FPV, and Ready Made RC.

RULES

The drone obstacle course can be created indoors or outdoors. The drone must be able to lift vertically, hover, and navigate safely through timed obstacle course, and return safely to the point of origin within a 5-minute time limit.

If needed, each participant will have up to (5) minutes to set up their obstacle course and have their drone ready for flight. If the drone does not function properly after the first attempt, participants will receive an additional (2) minutes to resolve the issue. After such time, if the drone is still not operational the entry will be disqualified. 2 2021 OEF Engineering Fair.

Upon registering, participant / team must take the blades off of their drone; then power-up the unit. Then put the blades back on the drone. This is known as a failsafe check.

Each participant must demonstrate successful lift, hover, obstacle negotiation, and return to the landing site or (point of origin).

The test will discontinue immediately if a drone appears to be out-of-control. If the participant cannot correct this condition within (2) minutes, they will be disqualified.

Each participant has a maximum of 12 minutes for the competition.

The objective is to create an imaginative and challenging drone obstacle course, while achieving the greatest accuracy in navigation demonstrating balance with stability, obstacle negotiation and speed of mission (max of 5 minutes). A minimum of (3) safety mechanisms must be place and participants must be able to explain orally why such mechanisms are important.

No hand intervention with the drone's operation is permitted during the competition other than controls from the radio.

NOTE: If the drone is created, a Parts List must be submitted at the time of check-in and inspection. The judges will observe and inspect each drone prior to competition.

The competition area should be off-limits to everyone except the competitors and those video recording the experience.

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JUDGING and SCORING

1. Students will receive an entry form the Oklahoma Engineering Foundation. Judges will virtually inspect the obstacle course and the drone and assign an entry number, indicating student's turn in sequence of competing.
2. An Award will be given to First, Second and Third Place and an Honorable Mention may also be awarded.
3. The obstacle course competition will continue until all registered entries have competed.
4. Every obstacle course and drone will be inspected and registered at the contest area just prior to competition. Each drone shall be registered and operated by one and only one team. No re-registration is permitted. A team may register only one drone. After course / drone inspection by the judges, the drone will be placed in the contest queue.
5. A score will be awarded to those demonstrating the largest ratio pertaining to accuracy in relationship to the speed of execution. A penalty equal to 50% will be applied for any entry not providing a complete and accurate parts list.

   - Creativity of Obstacle Course = 20 points The course can be created using any materials. The course can be created indoors or outdoors.
   - Difficulty of Obstacle Course = 15 points The more difficult the course, the better. Drone pilots should be able to safely maneuver their drones by hovering, flying over, under and through obstacle structures without touching any elements in the obstacle course.
   - Employment of (3) safety mechanisms = 10 points The Federal Aviation Administration has created rules and safety tips to help you fly safely. Be prepared to verbally provide at least (3) safety mechanisms that you have put into place prior to flying this obstacle course. https://www.faa.gov/UAS/getting_started/
   - Ability to safely and with stability hover drone for :05 to :10 seconds = 5 points
   - Ability to maneuver drone safely over, under and through obstacle structures = 10 points There will be a 10 point deduction for each and any obstacle contact.
   - Ability to create your own drone = 20 points As a reminder, a Parts List must be provided. This list should indicate the source, cost, and fabrication operations for the drone.
   - Ability to maneuver drone within obstacle course in 5 minutes or less:

     Over 5 minutes = 0 points
     4 to 5 minutes = 5 points
     3 to 4 minutes = 10 points
     2 to 3 minutes = 15 points
     1 to 2 minutes = 20 points

Maximum potential score: 100 points

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JUDGING and SCORING, CONTINUED

6. Prior to competition, each course and drone is to be virtually inspected and initialed by the judges to indicate compliance with contest construction specifications.
7. Each team is responsible for the security of its entry. No time will be spent looking for or waiting for teams not present when it is their turn. Teams not present will go to the end of the queue, only if time permits.
8. The only participants in the course area will be the drone pilot and the person(s) videoing them.
9. Decision of judges, during all phases of the competition, is FINAL. In the event of a tie, the drone determined to have the most creative obstacle course will be declared the winner.

PRIZES AND DISTRIBUTION

Contest winners will be announced on the OEF website at https://oef.org/2023winners and on the BAND app, https://band.us/n/a4ae73s2s3F7v on or before March 1, 2023.

First, Second and Third place winners will receive medals.

The winning classrooms of the First, Second and Third Place entries will receive a cash award, which will be mailed on or before April 1, 2023.

CONTACT

For more information contact Laura Shepherd-Madsen, Federal Aviation Administration, at laura.shepherd-madsen@faa.gov.