DRONE RACING EXHIBITION EVENT (B/C)

April 9, 2022 – Casper College, Casper, WY

EXHIBITION EVENT CATEGORY: Technology & Engineering

Division B – Grades 6-9 AND Division C – Grades 9-12

Description: In a timed test, teams will use their own remotely controlled drone weighing less than 250 grams to quickly navigate a 3D obstacle course. Winners are determined by the shortest combined time to successfully navigate all obstacles in the 3D course in sequence.

Team Size: Two members.

Eye Protection: Conventional eye protection required.

Impound: No.

Approximate Time/Event Time: 5-minutes per team.

EVENT PARAMETERS:

a. Space is limited; first-come, first-served—drone pilot teams MUST pre-register as a Science Olympiad competitive team.
b. Teams must pay a $125.00 per team WY Science Olympiad membership fee (plus $8.00 per team member for lunch) must be submitted with the completed membership form by March 15, 2022 for early registration. *Registrations received after March 18 will be $150 (plus $8.00 per team member for lunch) and due no later than March 15, 2022 at:* https://www.caspercollege.edu/events/science-olympiad/
c. Teams must bring with them one remotely controlled, wireless, quadcopter drone with a take-off weight of less than 250 grams that has "protected propellers" for safety.
d. Teams must have two student members: 1-pilot-in-charge and 1-visual observer for safety. The visual observer is to be in full communication with the pilot-in-charge and assist as needed, including relaunching a crashed drone from the crashed location.
e. FAA certification or licensure is not required of any competing drone pilots.
f. Teams may use optional FPV first-person-view googles
g. Teams will only be allowed one attempt at the obstacle course and must complete obstacles in the prescribed sequence.
h. Teams agree not to power on their drones or controllers until cleared to do so in order to avoid contaminated signals with other drones. Teams must agree to immediately power down their drones and controllers as soon as the obstacle course is completed.
i. If teams are unable to complete the obstacle course within 5-minutes, they will cease drone flight operations and be disqualified.

THE COMPETITION:

a. The event will be held indoors in a cleared gymnasium or cafeteria space. Tournament officials will announce the precise room dimensions in advance of the competition, but will have widths ranging from approximately 20 to 30 feet in width by 60 to120 feet in length with a celling height of at least 8 ft. In no case will participants be required to fly higher than 30 ft to complete the obstacle course. Shortest completion time determines the winner.
b. The obstacle course sequence will be created using 4 to 8 gates for the drone to pass through. Gates will have openings varying from a minimum of 3 ft to 7ft and can be in a variety of shapes including hoops

and rectangles. The center of the openings will range from 1.5 feet to 28.5 feet above the ground. *The precise position, number, and size of the gates will not be announced prior to the event*.

c. Event Sequence – Teams will be given notice to power up their drone and controller approximately 30-seconds prior to the start of the race. Drones will be launched from a marked spot on the floor. Timing starts when the tournament officials announce, "ready-3-2-1-go!" Pilots are to complete the obstacles in sequence—if an obstacle is missed, the drone needs to turn around and try again, if the drone crashes, the team's VO may enter the course and set the drone upright if needed. When the drone completes the obstacle course and lands on the "launch pad" then a tournament official will announce the course completion time. *At that point, the team is to power down the drone and the controller immediately or be disqualified*.

d. Other Event Specific Instructions – The pilot-in-charge and the visual observer are allowed to stand within the obstacle course, if desired. For safety, it is critical that teams do not power up their drones or controllers until instructed to do so, and to power down their drones and controllers immediately at the conclusion of completing the obstacle course.

e. In the unlikely event that a drone is damaged during the competition, the tournament officials nor hosts have any responsibility for damages.

SCORING:

a. Winners are determined by the shortest time from "launch to landing with propellers stopped."
b. A team that is unable to successfully clear a gate in the prescribed sequence will be disqualified and should go back and reattempt any missed gates in sequence.
c. A team that is unable to successfully navigate the obstacle course in 5-minutes will be disqualified.
d. Timing will generally be done using a stopwatch or a photogate by a tournament official.

RECOMMENDED RESOURCES:

- *DRONES*: A wide variety of remotely controlled quadcopter drones weighing less than 250 grams with propeller guards are acceptable for this challenge. These include the DJI Tello and the DJI Mavic Mini, and similar drones. Smaller, and much faster, racing drones—such as "tiny whoops" and "micro drones" are acceptable as well.
- *GATES*: The gates used are simple, usually either suspended "hula hoops" or 5'x5' (or smaller) rectangles, usually made from lightweight PVC.
- *COURSE*: The course will be laid out such that there is at least one long straight section to demonstrate a drone's speed and at least one slalom section to demonstrate a pilot's precision flying skills. As an example, imagine a course being laid out similar to the numerals "13."

(For additional information about this exhibition event, contact Event Supervisor Tim Slater at idrone@uwyo.edu and check out the Wyoming Drone Challenges Website at www.drone-challenges.org)