Name: _____
Date: _____

Act 08: Manual Flight (Indoors) - *Due Date*

Steps

- ☐ Complete pre-flight checklist
- ☐ Watch skill-building videos
- ☐ Complete the following activities:
    - ☐ Skill-Building Exercise
    - ☐ In-Flight Box Exercise
    - ☐ Hopscotch Exercise
    - ☐ Obstacle Course Exercise

Pre-Flight Checklist

For more detail, visit this presentation.
With the aircraft powered off:

- ☐ Inspect aircraft for physical damage
    - ☐ Ensure propellers are mounted securely
    - ☐ Ensure propeller guards are securely fastened and allow for free movement of props
- ☐ Ensure batteries are fully charged
- ☐ Check:
    - ☐ Remote Controller
    - ☐ Drone Battery
    - ☐ Mobile Device
- ☐ Determine if calibration is necessary (compass/IMU)
- ☐ Perform calibrations if:
    - ☐ You have updated the aircraft and RC firmware
    - ☐ You are flying in a new location
    - ☐ The aircraft has experienced a crash or impact
- ☐ Evaluate flight area for safety
    - ☐ Only fly in large open spaces. Fly only in well lighted spaces
    - ☐ Ensure flying is allowed in your current location
    - ☐ Place Drone at takeoff location, facing correct direction per flight plan
    - ☐ Wind/A/C speed is less than 15 mph
    - ☐ Flight mission is reviewed
    - ☐ Flight path will not take the aircraft near or above any people, furnishings, etc.

- [ ] Ensure that **ALL** people (students and adults) in the room are wearing appropriate PPE (safety glasses at least) before beginning flight
- [ ] Remember:
    - [ ] DO NOT FLY THE AIRCRAFT OVER PEOPLE.
    - [ ] AVOID FLYING INTO WALLS, CEILINGS, FURNITURE
- [ ] Designate an experienced adult over 18 years of age as Pilot In Command (PIC) (usually this is your instructor)
    - [ ] PIC has reviewed procedures for aborting mission & resuming control
    - [ ] Get permission from PIC to fly
- [ ] Close any unnecessary software on tablet/phone/computer used to fly

With the remote and aircraft powered on:

- [ ] Connect to the Drone
- [ ] Ensure all students are clear of your flight area
- [ ] Begin flight mission

While airborne:

- [ ] Observe the aircraft and make sure it is behaving as expected
- [ ] Keep the landing area clear
- [ ] If the aircraft behaves unexpectedly:
    - [ ] Manually control the aircraft and land in a safe location

Skill-Building Videos

Understanding Roll, Pitch and Yaw in Drones

Drone flight physics in under 2 minutes - Yaw, Pitch & Roll

Activities

Skill-Building Exercise

Before you begin, ensure that you are wearing proper safety equipment.

Task: Record a video showcasing completion of the following tasks:

- [ ] Launch: Place drone on takeoff location and launch drone
- [ ] Climb: Climb at least 1 meter
- [ ] Descend: Descend at least 1 meter
- [ ] Move left then right: Move drone at least 1 meter left, then at least 1 meter right
- [ ] Move forward and backward: Move drone at least 1 meter forward then 1 meter backward
- [ ] Rotate drone clockwise/counterclockwise: Rorate drone clockwise. Rotate drone counterclockwise

- [ ] Successful landing: Land drone in same location and show battery level

In-Flight Exercise

Task: Record a video showcasing completion of the following tasks:

- [ ] Launch: Place drone on takeoff location and launch drone
- [ ] Climb: Climb to approximately 1.5 meters above floor level
- [ ] Fly a Box: Pitch
    - Fly the drone in a box approximately 1 meter square (size is not critical, but it needs to be big enough to see)
    - Do not turn the drone as you “draw” the box in the air
- [ ] Fly a Box: Turn
    - Fly the drone in a box approximately 1 meter square (size is not critical, but it needs to be big enough to see)
    - Turn the drone as you “draw” the box in the air (in other words, each leg of the box will be straight, and you will make a turn at each corner). You may make a left or right 90° turn.
- [ ] Successful landing: Land drone in same location and show battery level

Hopscotch Exercise

Task: Record a video showcasing completion of the following tasks:

- [ ] Launch: Place drone on takeoff location in Hopscotch Square 1 and launch drone
- [ ] Navigate to Hopscotch Square 2 and land
- [ ] Navigate to Hopscotch Square 3 and land. (Hint: You will need to move left before landing)
- [ ] Navigate to Hopscotch Square 4 and land. (Hint: You will need to move right before landing)
- [ ] Finish Hopscotch Course
- [ ] At Square 10, rotate the drone 180 degrees and come back the same way
- [ ] Successful landing: Land drone in Square 1 and show battery level

Obstacle Course Exercise

Task: Record a video showcasing completion of the following tasks:

- [ ] Launch: Place drone on launch location in obstacle course
- [ ] Fly the course: Fly through the obstacle course (Recommendation: Practice the course slowly once before recording)
- [ ] Successful landing: Land drone in starting location and show battery level