Spring Project Plan:

Over Winter Break:

Propulsion System

- Finalize design of the propulsion system. This includes the number and shape of exit nozzles, the length of the ducting, how it will be stored in the device, how the controllers and batteries will be stored. Construct CAD model.
- Research what construction materials will be best (3D printing, fiberglass, foam, or mixture of all).
- Research how the thrust will be controlled using a PID type controller.

Recovery System

- Set up meeting with parachute person.
- Continue design for recovery mechanism.

Payload Housing

- Determine length of rods and desired lubricant.
- Continue design of payload housing and optimal way to insert and remove payload.

Miscellaneous

- Research other necessary parts for construction

January:

Propulsion System

- Order propulsion components which have been selected as of 12/01/2022.
- Finish construction of first iteration of propulsion system. Identify problem areas to further refine the design.
- Begin construction of the control law that will govern the throttle of the motor depending on either accelerometers or payload positioning.
- Assemble first iteration of propulsion system. Test command and control of motor using Arduino.

Recovery System

- Determine and obtain the correct parachute from the scheduled meeting.
- Finalize parachute storage housing.
- Finish preliminary design of door and begin testing the springs and door with Arduino.
- Begin testing of individual components and identify problem areas.

Payload Housing

- By end of January, design for payload housing is finished.

- Begin inserting and fastening components into the main section to check fitment and friction of payload.
- Ensure payload can be easily inserted and removed.

Miscellaneous

- Determine fin size and material.
- Design connection ports to drone

February:

Propulsion System

- Finalize the propulsion system design no later than the second week of February.
- Begin testing of the propulsion system. This will be conducted in a yet to be determined manner.

Recovery System

- Finalize the spring-loaded door design for the parachute release.
- Finalize parachute testing and door actuation.
- All recovery components need to be fully functional.

Payload

- Begin testing payload movement and how the fan responds.

Miscellaneous

- Test release from “drone”. Check that Arduino will turn the fan speed up after release.

March:

All systems

- Mating of each system should start the first week of March.
- Combined testing and refinement will continue for the rest of March.

April 1: Senior Design Day

Last week of classes: Competition

May 1-5: Finals Week

May 6: Graduation commencement