

Meeting 1 - What We Covered

Intro:

- Introductions
- Learned more about everyone's skills, what they are good at/what they want to work on and learn
- Share onboarding packet

Beam 101 (Very Important):

- Wood shop (Not as important)
- Metal Shop (Not as important)
- Electronics (Important)
- 3d printing (Very important)

Meeting Times

- We will have both general meetings with everyone present and assembly meetings, where we work on building and designing together
 - Meeting location:
 - Sitterson
 - BeAM Makerspace
 - AEL Lab
- Working on establishing a definitive meeting time

Project Overview:

Subsystems & Interfaces:

Main Propulsion & Vectoring:

- Generate Lift + Directional Thrust in Hover and Assist Transition.
- EDF - Propulsion Source
- Vectoring mechanism (pitch/yaw) - 3BSM (3 Bearing Swivel Module)
- Actuators: servos - High Torque servos (Calculations to determine necessary torque strength)
- ESC + power wiring

Secondary lift fans + roll control subsystem: (For Later)

Purpose: give strong roll authority in hover and balance torque around cg

Two small roll fans (left/right)

ESCs + motors/fans + mounts, or can purchase fans:

- Design here with 3d print and purchase motors
- Optional ducts for safety/efficiency

Interfaces:

Mechanical: Constant spacing from CG (roll torque arm)

Electrical: power distribution; ESC signals

Airframe + Structures:

Purpose: hold everything rigidly, note: CG and CP, and enable forward flight later.

- Payload structure
- Engine module mount
- Battery housing
- Wings + tail (Analyse necessary lift for forward flight)

Interfaces:

- Geometry: engine envelope clearance, servo access, wiring routing
- CG: battery and lift fan placement
- Aerodynamics

Avionics:

Purpose: stabilise hover, manage transition, log data, send telemetry, control the engine's thrust, and integrate with guidance/autonomy later

Interfaces:

Power management:

Sensors: IMU, baro, GPS, magnetometer (optional for hover-only), servo control, flight hover data

Data: telemetry radio + logging (SD/flash)

Autonomy layer (For Later):

Objectives:

Milestone 1:

Static bench-tested thrust vectoring module:

- Safe fixed-thrust run
- Vectoring works under an airflow load
- Servos can hold an angle

Lock in Engine:

- Size/ thrust target
- Battery Class - with enough power for electronics, and other fans, servos

Workflow Structure:

Meeting Template:

- We will design and build

Between Meetings

Goal: Arrive before the meeting objectives are done, which will be given at the end of the meeting or sent out afterwards

- Mid-Week Check In (Share what progress/issues/ideas you may have)
- Work and communicate with other team members in your respective group