OLD DOMINION UNIVERSITY

Frank Batten College of Engineering and Technology

The Institute for Autonomous & Connected Systems (IACS)

AUVSI AAM Expo

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Department of Mechanical and Aerospace Engineering

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About IACS
Institute for Autonomous and Connected Systems

- Brings together faculty and students across the ***Colleges of Engineering & Technology, Arts & Letters, and Sciences*** who have mutual interest in autonomous and connected systems including uncrewed and autonomous ***vehicles in air, land, space, and maritime applications***.
- Serves to elevate awareness of ODU's expertise in autonomou and connected systems, connect ODU researchers with releva industry and government agencies, and ***pursue large team-based funding opportunities***.
- Has an ***education mission*** and supports an undergraduate ***certificate*** program and a ***minor*** in Engineering, Design and Operation of ***Uncrewed Aerial Systems***.
- The vision to be recognized as *a* ***leader of innovation and applications of autonomous and connected systems***.
- Poised to create opportunities for research ***collaboration between the BCET, the Virginia Modeling and Simulation Cen (VMASC), Virginia Institute for Spaceflight & Autonomy (VISA) and industry partners*** in the Hampton Roads regions.

Undergraduate Certificate Program: (to serve industry partners like DroneUp)
Engineering, Design and Operation of Uncrewed Aerial Systems

I. Introduction to Uncrewed Aerial Systems (3 Credit Hours)
II. *Multirotor* UAS Design and Construction (3 Credit Hours)
III. *Fixed Wing and VTOL* UAS Design and Construction (3 Credit Hours)
IV. Autonomous Mission Platforms Systems Integration (3 credit hours)

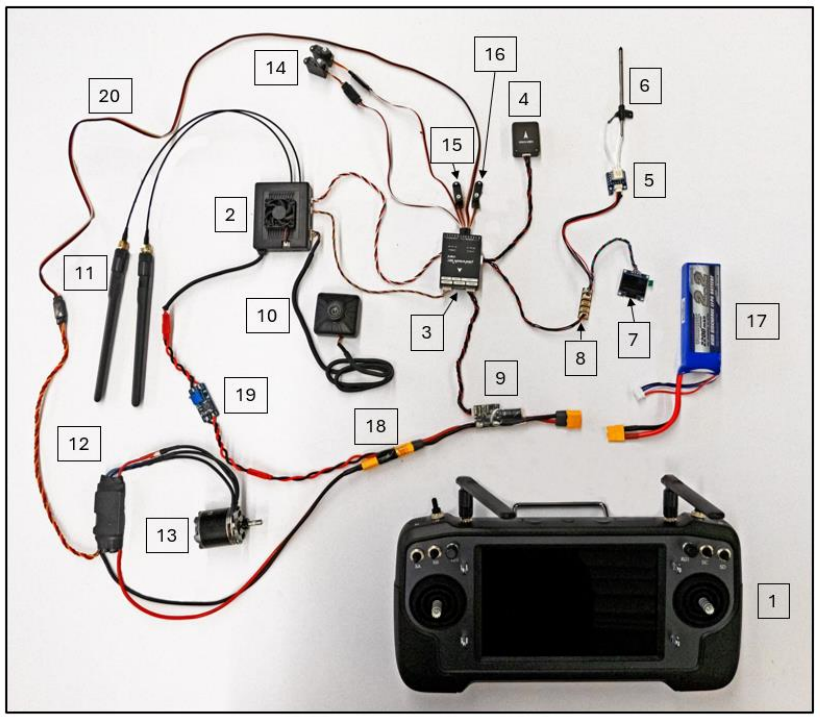
Minor / Engineering Elective for Specialization (from a list of courses)

The interdisciplinary minor is primarily open to engineering majors.

A UAS minor will consist of 2 courses offered in the UAS Certificate program, and any of a prescribed list of existing related courses for a total of at least 12 credit hours.

Submitted to SHEV and approved at University level.

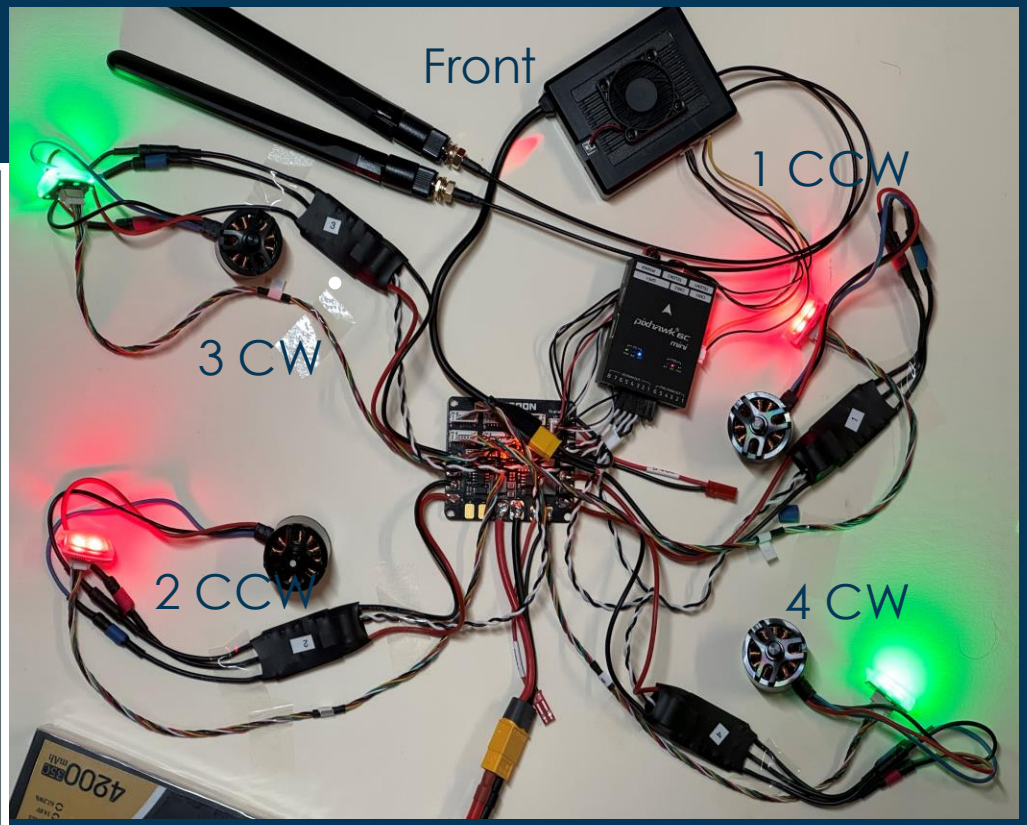
Materials for the vehicle to be built in the class: Fixed Wing and VTOL UAS Design and Construction



Bixler III Avionics/Power Components

1 SIYI Mk 32 Transmitter
2 SIYI MK32 HM30 MK15 Air Unit
3 Holybro Pixhawk 6C Mini Flight Controller
4 Holybro Micro M9N GPS Receiver
5 Matek Airspeed Sensor
6 Matek Pitot Tube
7 LCD Screen
8 I2C Bus
9 Holbro Pixhawk PM02 V3
10 SIYI R1M Ethernet Camera
11 Diversity Antennas
12 ESC (in Bixler)
13 Brushless Motor (in Bixler)
14 Aileron Servos (in Bixler)
15 Elevator Servo (in Bixler)
16 Rudder Servo (in Bixler)
17 2200 mah 3S 25C Lipo Battery
18 XT60 Male/Female with JST Female
19 Dorhea MT3608 DC-DC Step Up
20 ESC Extension

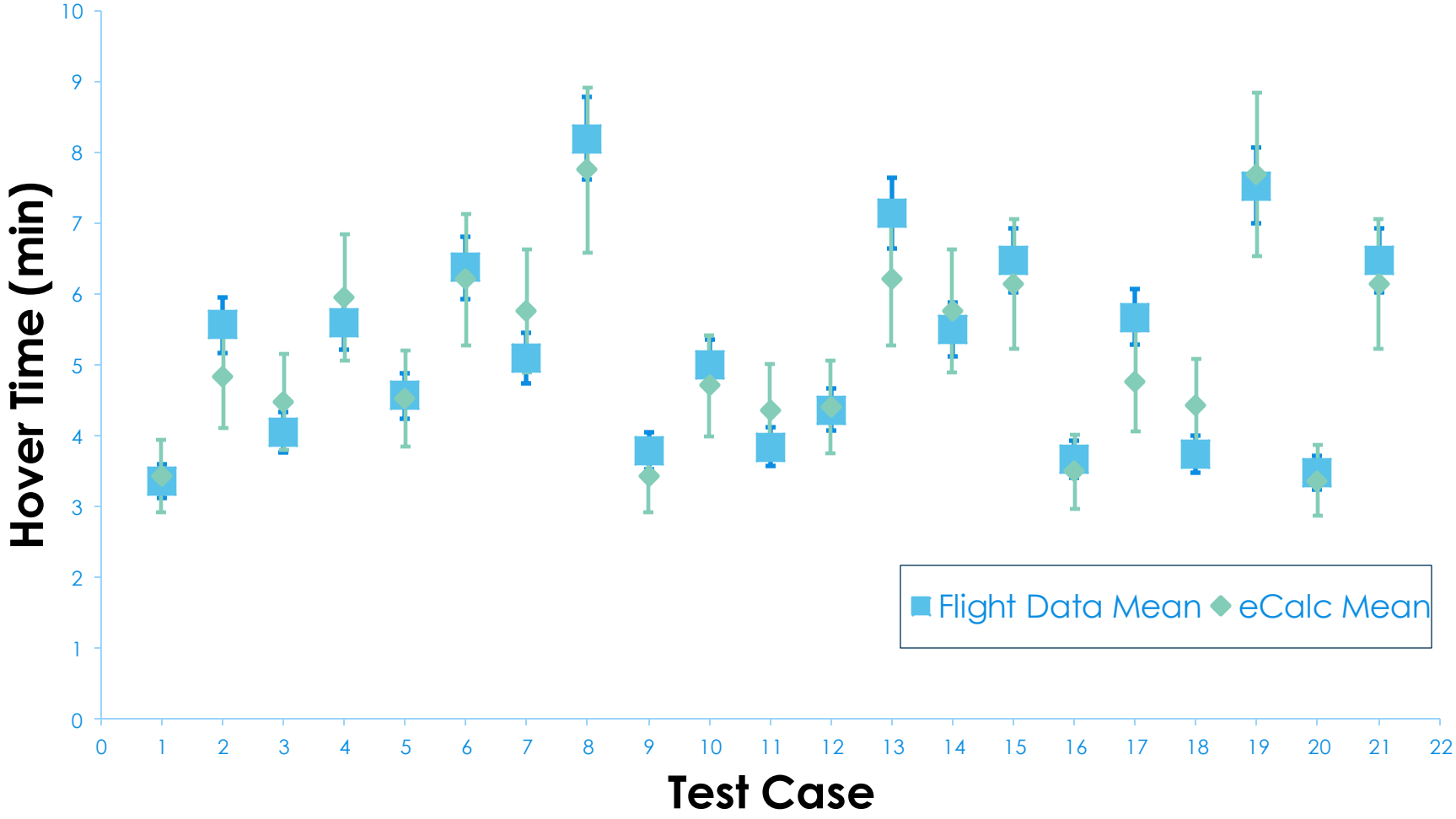
Materials for the vehicle to be built in the class: Multirotor UAS Design and Construction



- Design of Experiments (DOE) based flight test
- Validates eCalc for multirotor, the most popular UAS performance prediction simulation
- Predictions proven within the ±15% c

xcopterCalc eCalc for Multirotor

Flight Data Mean Compared to eCalc Prediction



An IACS Graduate Student Testing a Drone (QuadPlane) in the ODU Wind Tunnel