



# UCI Cargo Plane 2021-2022 "AE-22"

## Background

Cargo Plane is a senior design project competing in the International SAE Aero Design competition. We are designing an RC aircraft that will carry payloads of soccer balls and metal plates. Our goal is to build an aircraft that generates high lift at low speeds while carrying a large payload within a small cargo bay.

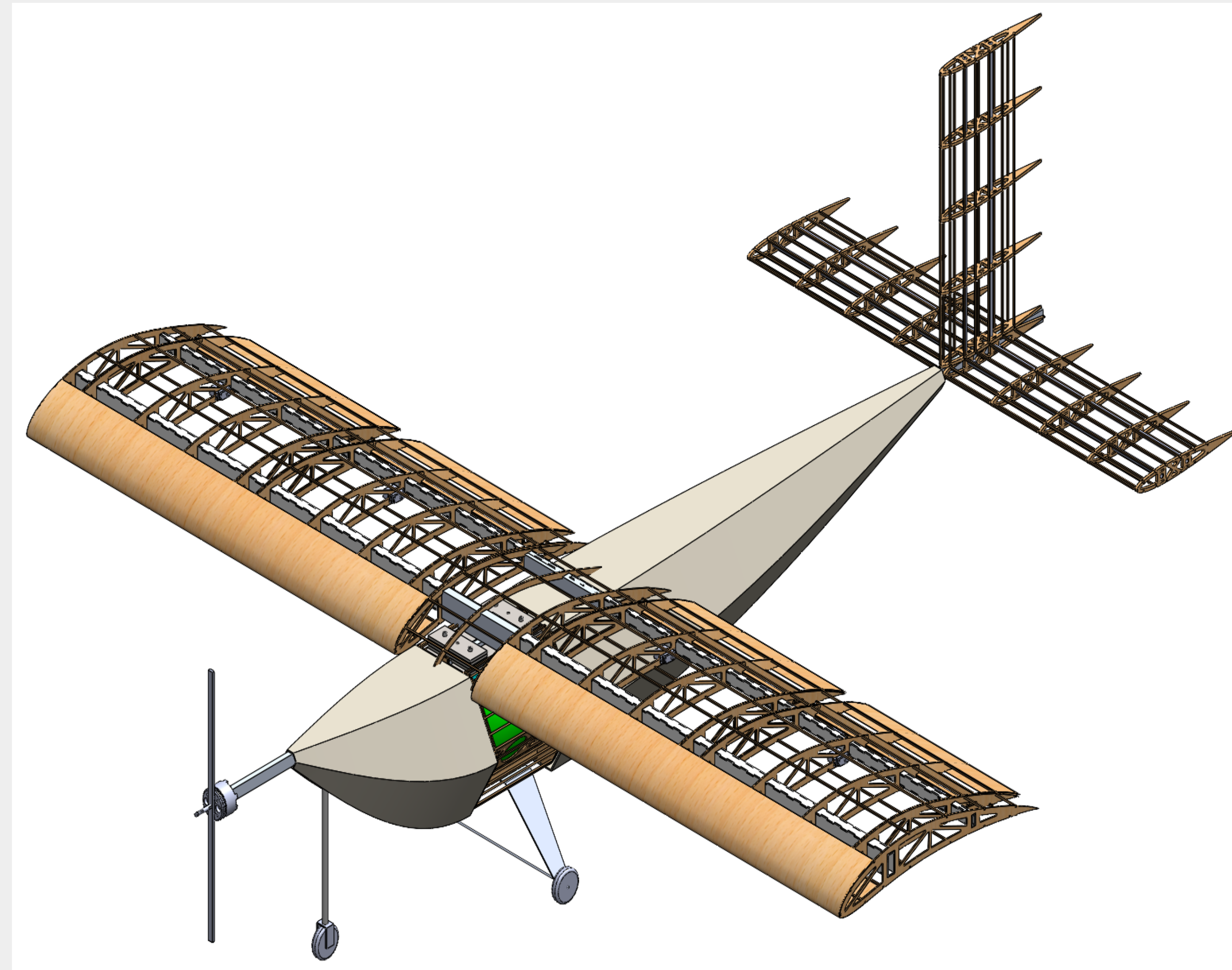
## Requirements/Constraints

**Maximum Loaded Weight:** 55 lbs  
**Maximum Wingspan:** 10 ft  
**Maximum Power :**1000 Watts  
**Takeoff Runway:** 100 ft  
**Landing Runway:** 400 ft  
**Cargo:** Soccer Balls and Steel Plates  
**CG Requirement:** Flyable in with and without cargo

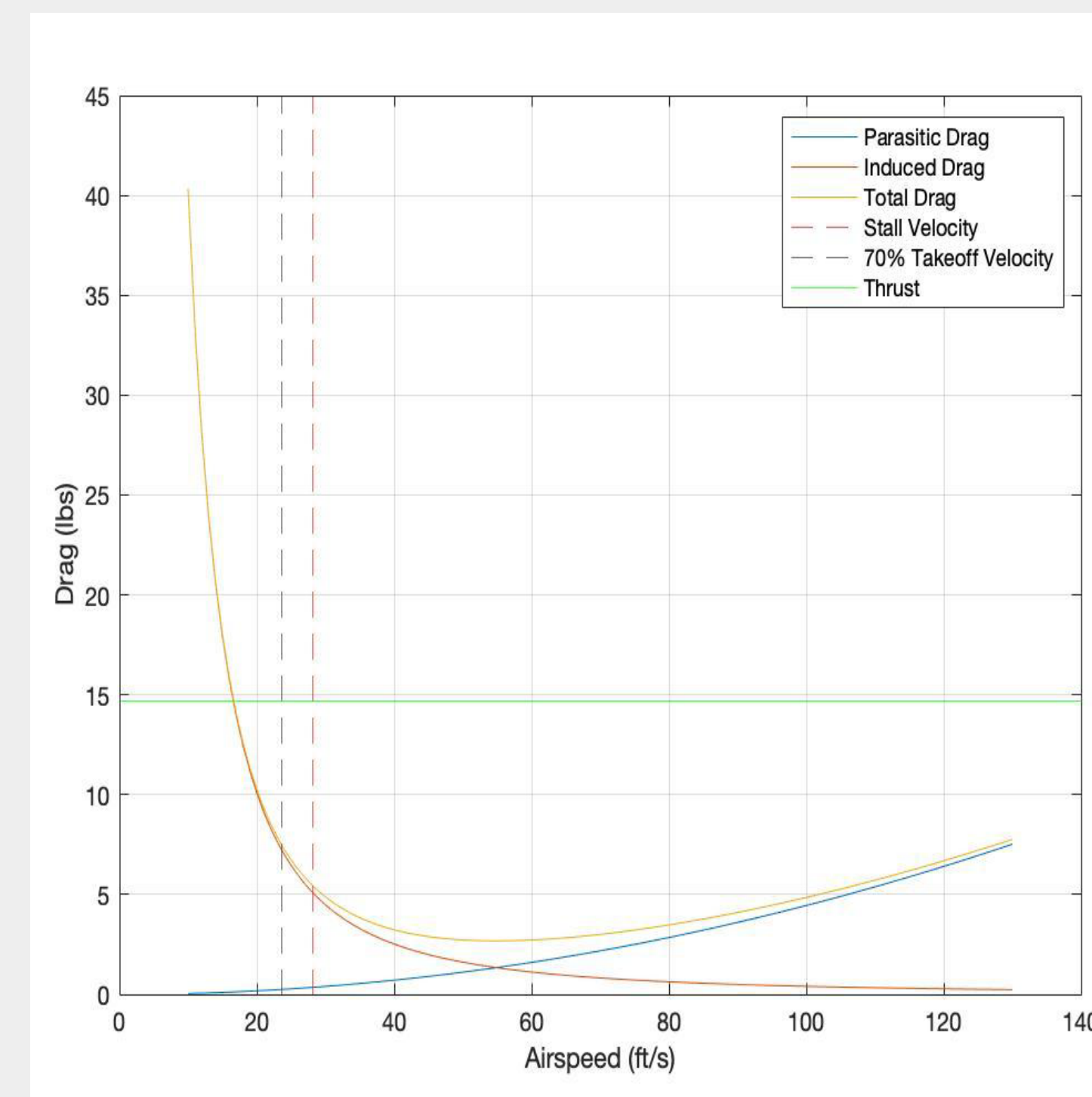
## Competition Scoring

For the 2022 SAE Aero Design Competition, the team must follow the flight score equation below:

$$FS = \frac{120 \cdot (3 \cdot S + W_{\text{Payload}})}{b + L_{\text{Cargo}}}$$



Structures	Propulsion/Avionics	Aerodynamics	Advisors
Amir Tadros	Pranav Peddinti	Alex Dominguez	Prof. LaRue
Casey Schorr	Alexis Infante	Ben Son	Sara Miri
Celine Yiu	Andrew Garcia	Brian Ndiaye	Sovanna Hul
Ephraim Liu	Calvin Kang	Jordan Louie	Tiffany Lee
Grazelle Vilorio	Kameron Clark	Mason Todd	
Gurpreet Tahim	Michael Zybart	Michael Shae	
Joshua Tanjiri	Rory Doherty	Oscar Aguilar-Cerna	
Tyler Furukawa	Vincent Nguyen	Peter Tran	
		Reece Rivera	
		Shaadi Sabeti	



## Wing Specifications

Airfoil	Eppler 423
Chord (ft)	2
Span (ft)	8
Aspect Ratio	4
Flap Span (ft)	1.5
Flap Chord (ft)	0.5
Aileron Span (ft)	1.5
Aileron Chord (ft)	0.5

## Tail Specifications

Airfoil	NACA 0012
Horizontal Span (ft)	4
Horizontal Chord (ft)	1
Vertical Span (ft)	2
Vertical Chord (ft)	1
Tail Moment Arm (ft)	4.33
Elevator Span (ft)	4
Elevator Chord (ft)	0.25
Rudder Span (ft)	2
Rudder Chord (ft)	0.25