PURDUE
SAE AERO

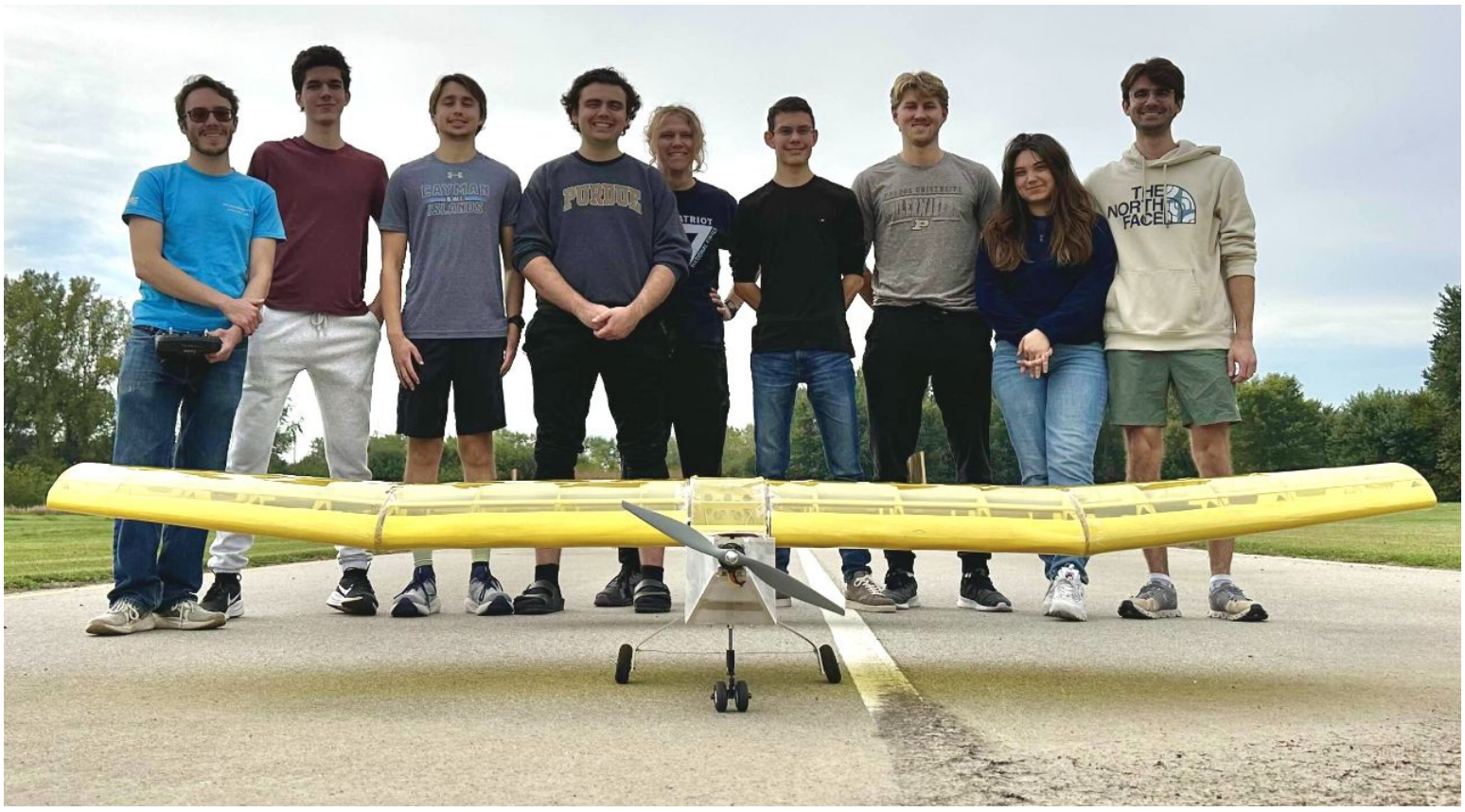
Information Packet
2025

PURDUE SAE AERO

OUR MISSION

Purdue SAE Aero is a **competitive aircraft design team** that develops, builds, and flies aircraft against other universities from across the nation and around the globe.

Our mission is to **train undergraduate engineers** to utilize aircraft design methodology and tools and **inspire passion** within them to develop high-performing aircraft.



ORGANIZATION AND HISTORY

Organization

- Interdisciplinary engineering team comprised of aero & astro engr, mechanical engr, aero engr technology, and CS
- Three distinct subteams: Aerodynamics, structures, and systems
- All teams cooperate to develop for aircraft for competitions run by the Society of Automotive Engineerings

History

- 2023: Organization founded by 5 sophomores
- 2024: First plane for SAE Aero Design East Competition
- 2025: Placed top 10 in presentations for the 2025 SAE Aero East Competition
- Goal: Outperform other universities in SAE Aero Competitions
- Goal: Bring innovative design concepts that change and inspire development

PURDUE SAE AERO

LEADERSHIP

William Shorey
President
BS AAE
Class of 2026

Nicholas Rose
Treasurer
BS AAE
Class of 2026

Matthew Leight
Technical Consultant
BS AAE
Class of 2025

Aaryan Lath
Chief Engineer
BS AAE
Class of 2026

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LEADERSHIP

Almos Quevedo
Aerodynamics Lead
BS AAE
Class of 2026

Leticia Santos
Systems Lead
BS AAE
Class of 2026

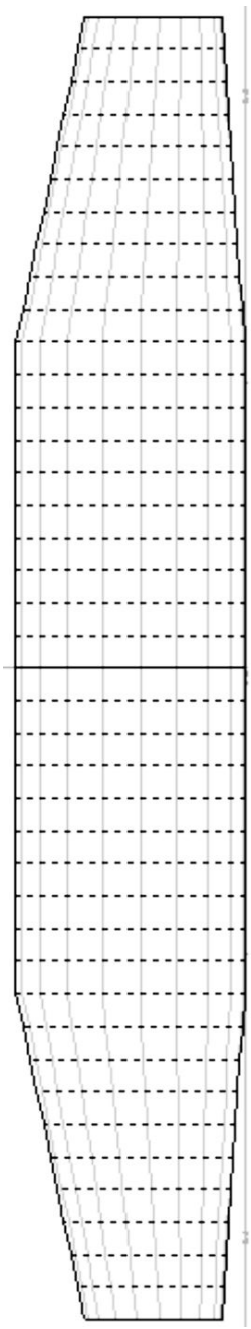
Max Palmer
Structures Lead
BS ME
Class of 2026

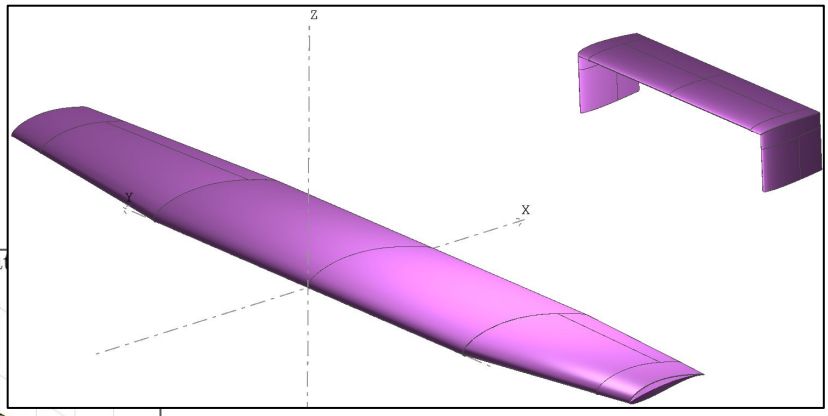
AJ Woods
Principle Structures Eng.
BS AAE
Class of 2028

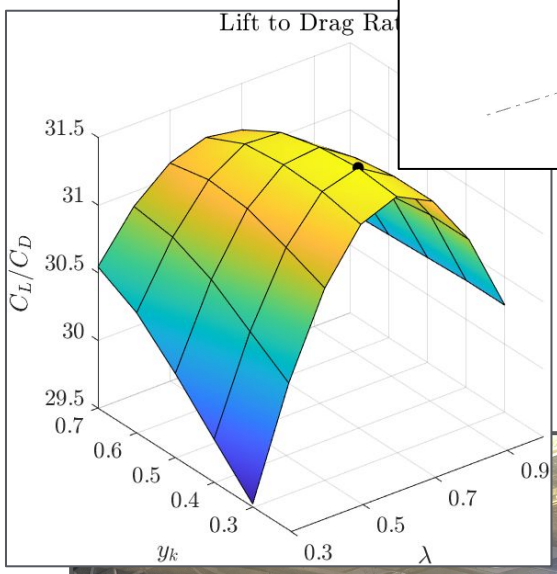
Adam Zhu
Principle Aerodynamics Eng.
BS AAE
Class of 2028

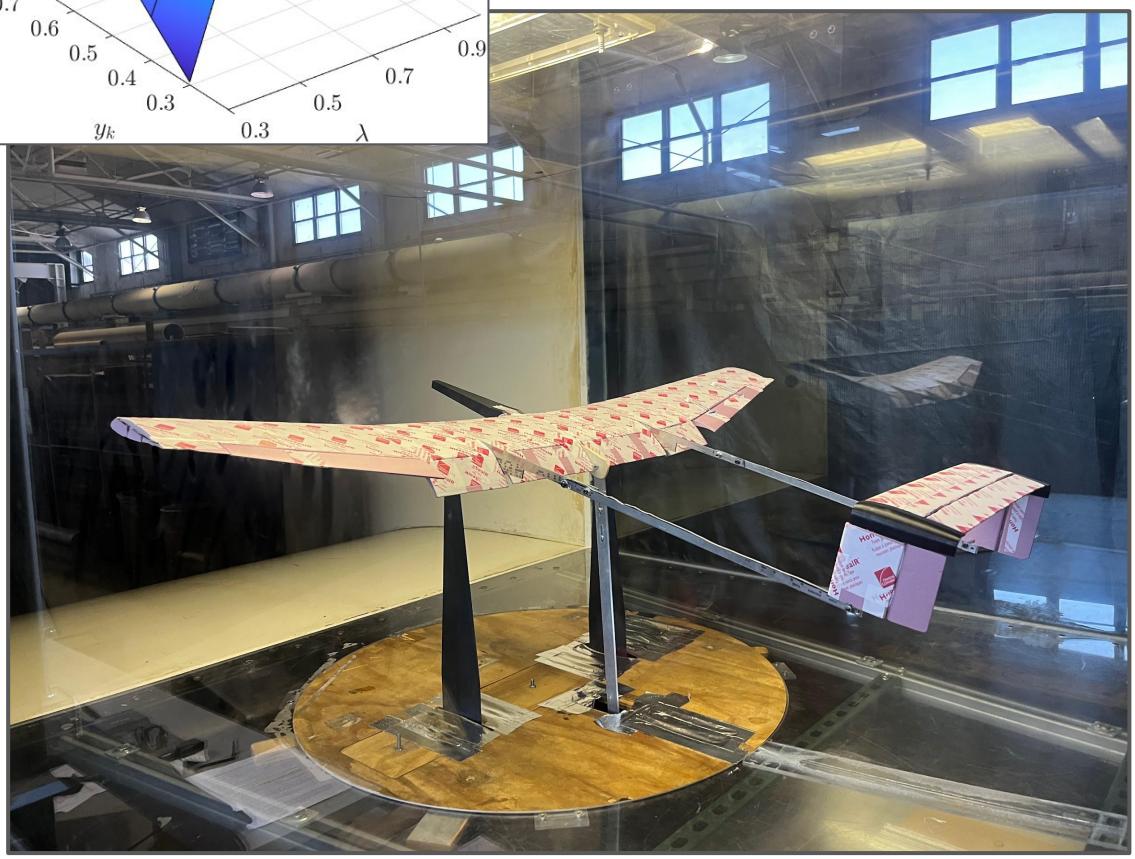
AERODYNAMICS

The aerodynamics subteam focuses on airfoil selection, wing and tail planform design and optimization, and verification via wind tunnel testing. The team utilizes tools including AVL, XFLR5, CFD, and custom MATLAB wrappers for aerodynamic and stability analysis.



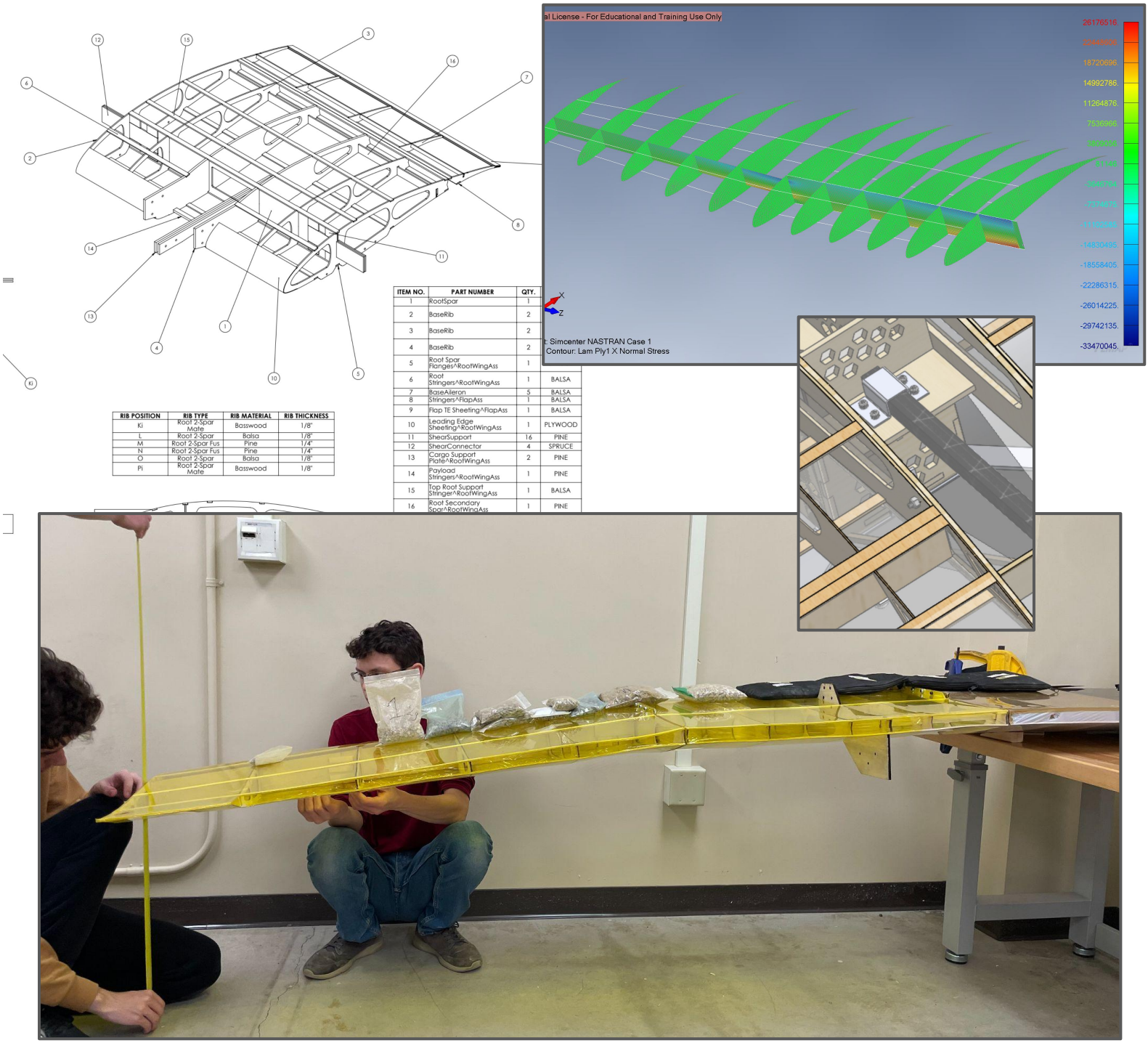






STRUCTURES

The structures subteam uses aerodynamic and inertial loads to size components. Additionally, structures conducts loading and stress tests on different aircraft components to verify structural design.

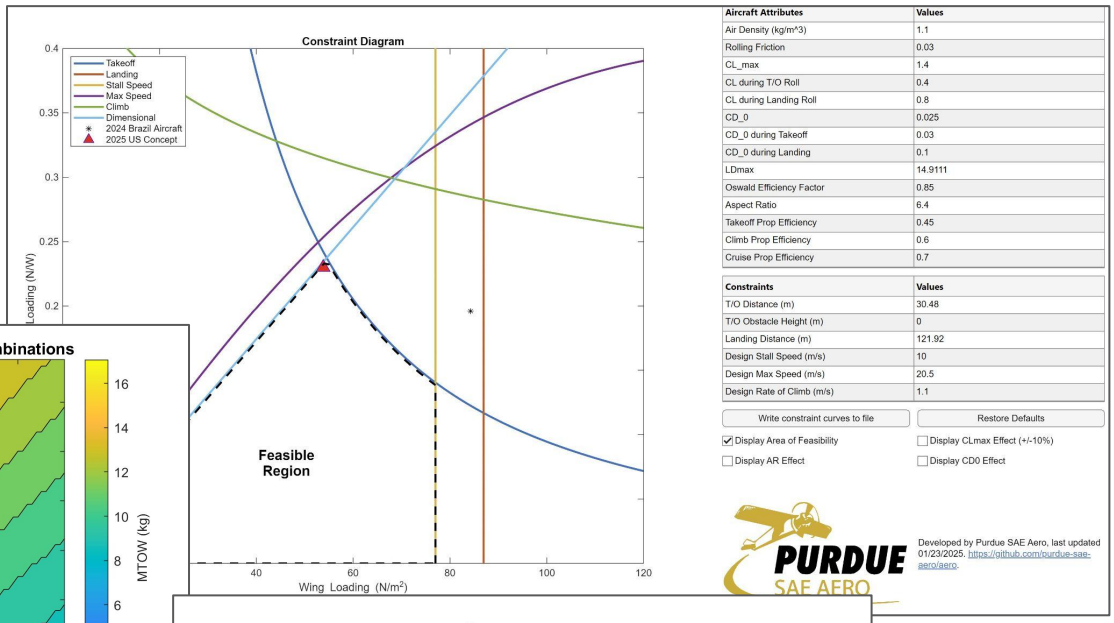


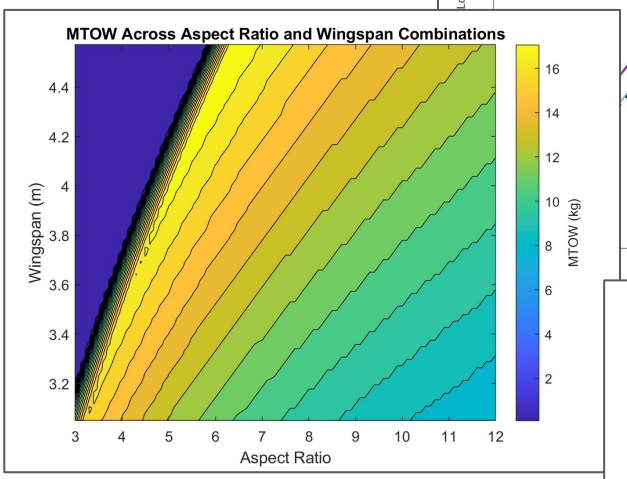
ITEM NO.	PART NUMBER	QTY.	
1	RootSpar	1	
2	BaseRib	2	
3	BaseRib	2	
4	BaseRib	2	
5	Root Spar Flanges^RootWingAss	1	
6	Root Stringers^RootWingAss	1	BALSA
7	BaseAileron	5	BALSA
8	Stringers^FlapAss	1	BALSA
9	Flap TE Sheeting^FlapAss	1	BALSA
10	Leading Edge Sheeting^RootWingAss	1	PLYWOOD
11	ShearSupport	16	PINE
12	ShearConnector	4	SPRUCE
13	Cargo Support Plate^RootWingAss	2	PINE
14	Payload Stringers^RootWingAss	1	PINE
15	Top Roof Support Stringer^RoofWingAss	1	BALSA
16	Root Secondary Spar^RootWingAss	1	PINE

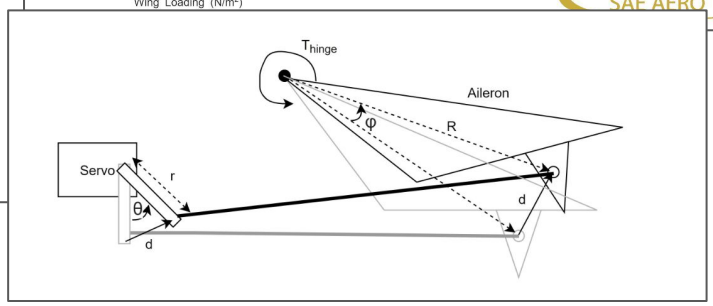
RIB POSITION	RIB TYPE	RIB MATERIAL	RIB THICKNESS
Ki	Root 2-Spar Mate	Basswood	1/8"
L	Root 2-Spar	Balsa	1/8"
M	Root 2-Spar Fus	Pine	1/4"
N	Root 2-Spar Fus	Pine	1/4"
O	Root 2-Spar	Balsa	1/8"
Pi	Root 2-Spar Mate	Basswood	1/8"

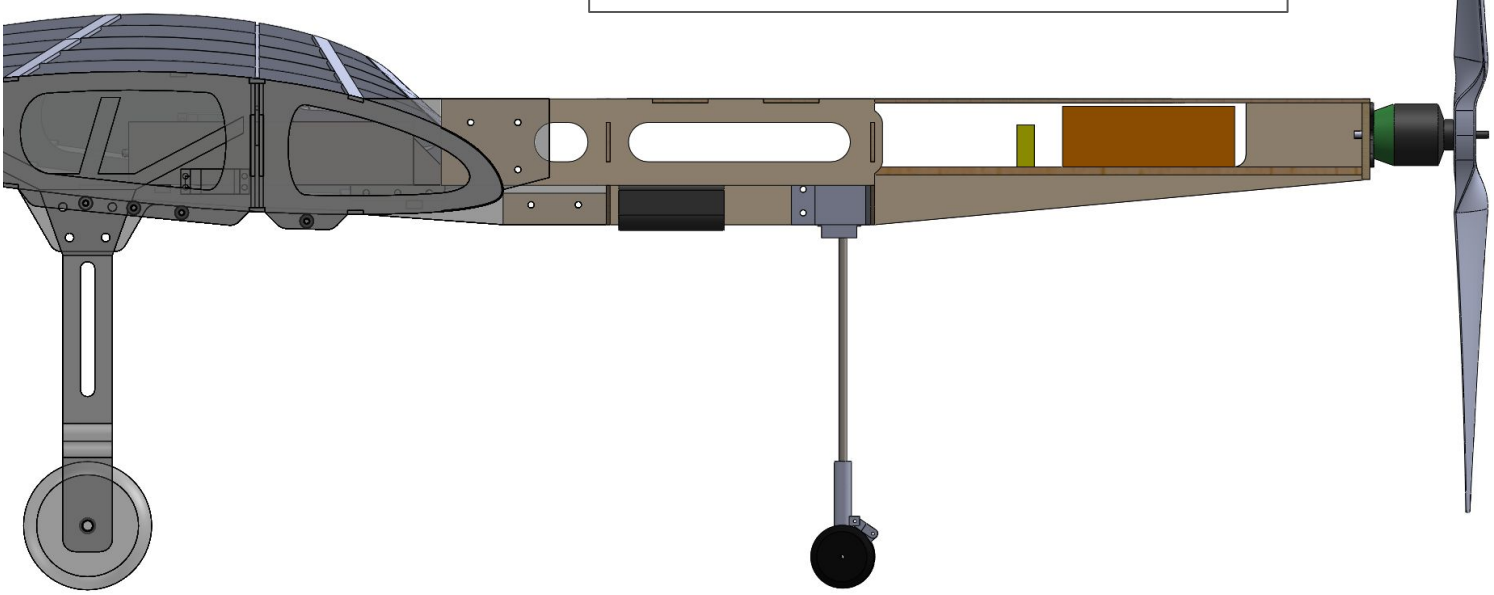
SYSTEMS

The systems subteam leads concept generation, selection, and preliminary sizing. This team is also responsible for managing the CAD model and integrating all subsystems such as landing gear, electronics, and control systems.







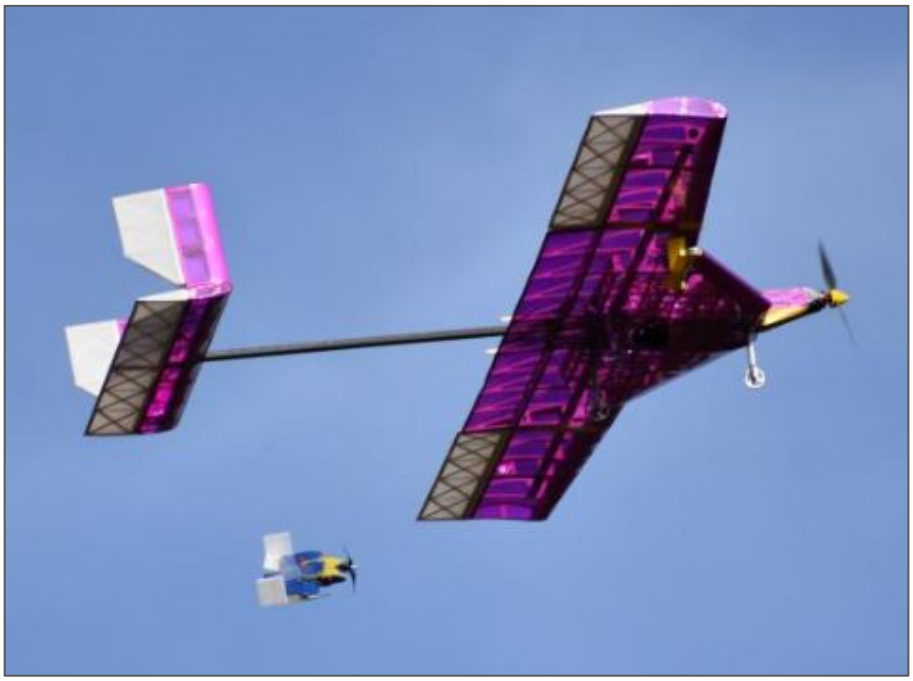


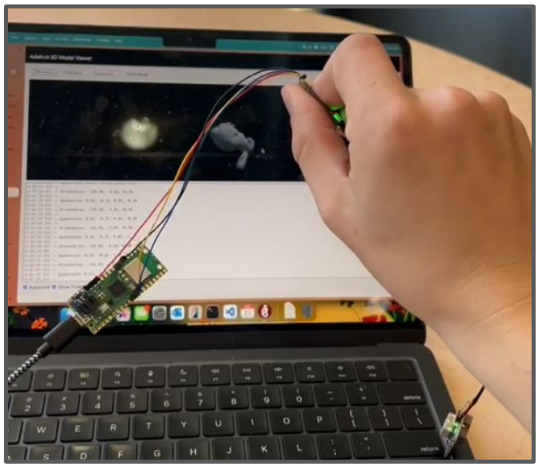
COMPETITIONS

Purdue SAE Aero participates in SAE Aero Design East, an annual competition run by the Society of Automotive Engineers (SAE). This competitions feature 3 days of fly-offs between universities from around the world - the pinnacle of months of engineering design and testing from future engineers.

EXPANSION

Purdue SAE Aero has a standing invitation to the exclusive SAE Aero Design Brazil Competition and is investing in infrastructure to sustain a second yearly event. Additionally, the team is recruiting members and raising funds to develop advanced material aircraft, with the goal of fielding both Regular and Advanced class missions in 2027.





EXPANSION CAPABILITIES

Expansion is possible due to:
A large, diverse, cross-disciplinary talent pool from across the university.

Leveraging the scale of a top-tier engineering university, with the School of Aeronautics and Astronautics featuring over 40+ faculty members and extensive institutional resources and 5 aircraft design teams.

Major/Program	Total Undergrad Enrollment (Approx.)	Estimated Interest Pool	Potential # of Students	Key Roles & Skills for SAE Aero
Aeronautical & Astronautical Engineering (AAE)	1,600	30%	480+	Aerodynamics, Structures, Systems Integration, Propulsion, Flight Dynamics
Mechanical Engineering (ME)	2,500	5%	125+	Mechanical Design (CAD), Structural Analysis (FEA), Manufacturing, Mechanisms
Electrical & Computer Engineering (ECE) / Computer Science (CS)	4,000+	2%	80+	GNC, Electronics, Flight Controls, Computer Vision, Data Telemetry
Integrated Business & Engineering (IBE) / Mitchell E. Daniels, Jr. School of Business	2,000+	3%	60+	Project Management, Sponsor Relations, Marketing, Logistics, Budgeting, Outreach

RESEARCH and DEVELOPMENT

Establish a dedicated R&D team (~15 members) to explore advanced concepts and maintain a competitive advantage in all competition classes.

Motivation:

3 year competition cycle with each year requiring a new aircraft to be built.

Drive Purdue competitiveness through **ambitious design** which might not be possible to build in year 1.

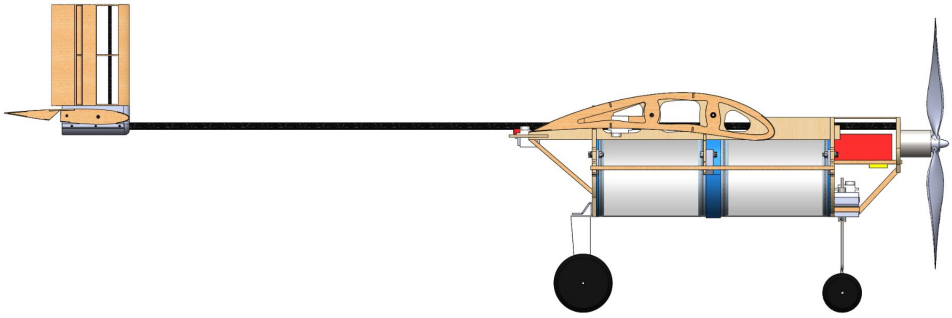
Key R&D initiatives to achieve this include::

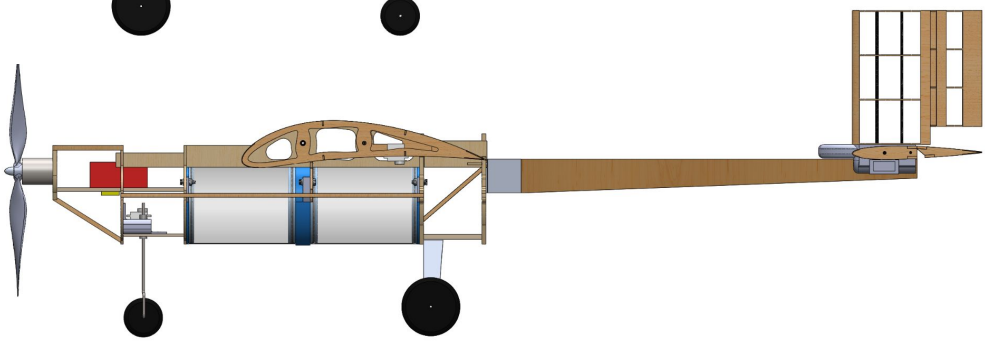
- Out of the box thinking
- Wind tunnel test campaign
- In-flight data telemetry
- Material characterization
- Prop and gearbox design

TRAINING/ ONBOARDING PROGRAM

For the first time, incoming members were charged with redesigning our first competition aircraft (2024 micro) to introduce them to the aircraft design process and teach them the tools they need to succeed in our subteams.

Original Micro Class Design, 2024





Onboarding Redesign, 2026

Overarching goal:

Teach foundational aircraft design principles to freshman and sophomore students, providing them a significant head start before they encounter these topics in their junior-year curriculum.

Offer an accessible pathway for students from all majors to gain practical, interdisciplinary design experience.

Establish industry partnerships to provide our members with real-world design challenges relevant to our design process and, directly connecting sponsors with emerging talent.

SPONSOR PACKAGES

GROUND CREW $100-$1,499

- Logo in marketing materials
- Team update newsletters

TAKEOFF $1,500-$4,499

- All previous rewards
- Logo on team jersey sleeves
- Invitation to major team events
- Access to team resume booklet

CRUISE $4,500+

- All previous rewards
- Logo on all competition aircraft and team jersey (front/back)
- PSAEA will host a semesterly networking session
- Exclusive sponsorship merch items

BUDGET BREAKDOWN

Estimated breakdown per year for a full-fledged working club (based on current aircraft design from the regular class design):

Item	Estimated Cost ($)	Notes
Regular Class Aircraft	4,500 x2	Based on past projects with added budget for prototyping and testing. (3 prototypes, 1 aircraft with spare parts for the competition)
Advanced Class Aircraft	5,500 x2	Includes higher material costs and equipment for carbon fiber fabrication. (3 prototypes, 1 aircraft with spare parts for the competition)
Micro Class Aircraft	3,600 x2	Estimated at 80% of the Regular Class cost.
R&D / Prototyping	3,000	Dedicated funds for testing new designs and materials, a key lesson from the 2024 Brazil trip.
Onboarding Program	1,000	Supports building up to 5 training aircraft for new members.
Competition Travel (Brazil)	7,000	Covers flights for 10 members, lodging (3 days), and aircraft shipping.
Competition Travel (US)	2-3,000	Covers lodging (3 days), ground transport for 10 members.
Total Estimated Budget	41,200	—

Access to many of the common equipment items is at Bechtel (The Boiler Maker Space) and the Purdue Technology Center which are both highly used spaces and in different locations. Provision/ funding of equipment is highly appreciated

FUNDING MILESTONES

$12,500 — Domestic Competition

- This foundational support fully funds our aircraft design to **Micro, Regular** and **Advanced** Class entries for the SAE Aero Design **East/West** competition.
- Includes travel funding as well.

$25,000-32,500 — International Presence

- This level of partnership enables us to represent Purdue on the world stage by funding our travel and participation in the SAE Brazil competition.
- Achieving this goal makes us a year-round, internationally competitive team.

$40,000+ — Full-Spectrum Capabilities

- This funds all competition activities and allows us to invest heavily in **Research & Development and the Onboarding Program.**

Wiggle room within the funding milestones includes using Wood instead of Carbon Fiber, etc. (Apart from some Advanced class challenges which need to be extremely lightweight)

CONTACT US

INSTAGRAM

https://www.instagram.com/purduesaeaero?utm_source=ig_web_button_share_sheet&igsh=ZDNlZDc0MzIxNw==

PURDUESAEAERO

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How to Sponsor by Check

Make the check payable to SAE Aero at Purdue, BOSO account 03396

Mail the check to:
Business Office for Student Organizations (BOSO)
1198 3rd Street, Room 365
West Lafayette, IN 47906

How to Sponsor Electronically

1. Visit this website: https://giving.purdue.edu/cart?dids=SO3396&appealcode=18240
2. Under the One Time Gift, press edit
3. Choose payment style and enter payment amount
4. Checkout
5. Enter the email address
6. Under “Giving by Corporate Credit Card,” enter the company name
7. Enter payment information
8. Review Order
9. Place Order