Undergraduate Research Opportunities

Aircraft Propulsion and Systems Analysis

Purdue University, School of Aeronautics and Astronautics

We have hourly-paid or for-credit undergraduate research positions on a new sponsored research project in aircraft propulsion, performance, and systems analysis. The project involves Purdue AAE faculty (Prof. Crossley, Prof. DeLaurentis, Prof. Leifsson, Dr. Tsutsui) and external government and industry research partners.

The opportunity

Future aircraft will require propulsion systems that provide substantially improved efficiency while meeting demanding aircraft performance and operational requirements. Join a Purdue research team developing computational models and design methods to understand how advanced propulsion technologies affect aircraft range, fuel consumption, weight, and overall performance. Students will contribute to a real-world aircraft design and systems analysis problem with direct relevance to future aerospace technologies.



Image from https://www.rtx.com/en/prattwhitney/products/military-engines/f117

Research areas

- Aircraft performance and mission analysis: predicting range, fuel burn, takeoff, climb, and other performance measures
- Propulsion modeling: representing advanced engine technologies and their effects on aircraft performance
- Aircraft design and systems analysis: evaluating interactions among propulsion, weight, aerodynamics, and mission requirements

No prior experience in all of these areas is expected. You'll learn them on the project.

We're looking for

- Current Purdue junior and senior undergraduate students in AAE or a related engineering field
- Some programming experience, preferably Python
- Interest or coursework in one or more of: aircraft design, aerodynamics, propulsion, flight performance, computational modeling, optimization, or systems engineering

What you'll get

- Hourly pay or research credit, approximately 10 hours per week
- Mentorship from Purdue faculty and graduate students
- Hands-on experience with aircraft performance, propulsion, and computational design tools
- Exposure to government- and industry-sponsored aerospace research
- Opportunities to present research results and potentially contribute to technical publications or reports

Start: Spring 2027 or sooner. Positions may continue into summer and later semesters.

How to apply: Email your CV/resume, unofficial transcript, and a short paragraph describing your interests to Prof. Leifur Leifsson (leifur@purdue.edu) with the subject line "Aircraft Propulsion Undergraduate Research." Applications will be reviewed as they are received until the positions are filled.

Note: U.S. citizenship is required for participation in this project.