Auburn Aerospace Engineering: A Brief Overview

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AU AE Day in Huntsville
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Aerospace Engineering

Enrollment
- Undergraduate: 478
- Graduate: 51 (Goal: 100)

Degrees
- B.S.
- M.S.
- Ph.D.

Curriculum
- Aerodynamics & Propulsion
- Aerospace Structures & Materials
- Flight Dynamics and Control
- Orbital Mechanics
- Aerospace Design
Recent Faculty Departures

Cochran  Foster  Crouse  Shelton

Sinclair  Gross  Cicci (June 2018)
Recent Faculty Additions

Agrawal
Celestine
Chakraborty (Fall 2018)
Guzzetti (Spring 2019)
Hirabayashi
Mailen
Majdalani
Nichols
Raghav
Scarborough
Melnick
Speakman
Triggs
Auburn Aerospace

Faculty

14 Tenure-Track Faculty
(9 hired in last 3 yrs)
3 Lecturers
4 Staff
Undergraduate Enrollment

- **Aerospace Engineering**
  - 478 undergraduate students
  - 40% growth in 3 years
  - Trend expected to continue

- **College of Engineering**
  - 5,282 undergraduate students
  - 14% growth in 3 years

- **Auburn University**
  - 23,964 undergraduate students
  - 16% growth in 3 years
Undergraduate Program Highlights

- **Student Projects**
  - AIAA Design, Build & Fly
  - NASA University Student Launch Initiative
  - AU Small Satellite Program
  - Revolutionary Aerospace Systems Concepts

- **Academic Linkage**

- **Undergraduate Research**

- **Co-Ops & Internships**
Wind Tunnels – Short Term

Wind Tunnels

- 3’ x 4’ Closed-Circuit Subsonic
  - Primarily used for research with some instructional activity
  - Retired

- 2’ x 2’ Open-Circuit Subsonic
  - 50/50 mix between research and instruction
  - Temporarily moved to off-campus research facility

- 4” x 4” Blow-down Supersonic
  - 50/50 mix between research and instruction
  - Permanently moved to off-campus research facility
  - Purchased new compressor/storage tanks
Wind Tunnels - Long Term Plans

- Off-Campus Aerospace Research Laboratory
  - 40’ x 100’ floor space
  - Off campus location convenient for more energetic experiments
  - Combustion and propulsion research laboratories

- Gavin/Brown-Kopel – Under Construction
  - 8,000 ft² for research and instruction
  - NEW Aerodynamics Laboratory
    - Multiple subsonic and supersonic experiment stations
    - Small, integrated units directly operated by students
  - Propulsion Laboratory
  - Existing 2’ x 2’ open circuit tunnel
  - NEW Research Tunnels
    - Acquired GM R&D Basic Research Wind Tunnel (28” x 20” closed circuit tunnel
    - Space for additional facilities

- Still developing a vision for a new research tunnel that will establish Auburn as a premiere research institution
Ongoing Renovations and Improvements

- **Davis 106 – Lt. Col. William W. Petit Aerospace Research Laboratory**
  - Multifunctional Materials Laboratory (Celestine)
  - Polymer Mechanics Laboratory (Mailen)
  - Applied Fluid Dynamics Laboratory (Raghav)
  - Chemical Fume Hoods

- **Davis 107 – 3D Printing Laboratory**
  - Will provide students with access to modern 3D printing capabilities
  - ABS, HIPS, PLA, Nylon, fiber-reinforced composites, etc.
  - Complement to Center for Additive Manufacturing

- **Brown-Kopel Student Achievement Center**
  - New aerodynamics laboratory (8,000 sq. ft.) containing both instructional and research-grade wind tunnel facilities
Samuel Ginn College of Engineering - Vision

- The best student-centered experience in America
- Leading research that improves the quality of life and fosters economic competitiveness
- A dynamic faculty that exemplifies excellence and innovation

Dean Chris Roberts
The Trajectory of Auburn University

Upcoming Installation Ceremony - Wednesday, March 28

- Auburn will take student leadership to new heights
- **Auburn will expand its role as a partnership university** by advancing impactful and transformative research and scholarship
- Auburn will elevate its active engagement with the State of Alabama
- Auburn graduates will expand their distinguished reputation in the marketplace
- Auburn will continue to broaden its commitment to diversity and inclusion
- Auburn is on the move

https://www.linkedin.com/pulse/land-grant-university-making-19th-century-concept-more-steven-leath/?trackingId=dHKZ6Aam15kupEyLPc2%2Fg%3D%3D

http://www.auburn.edu/administration/president/installation/
Why are we here?

- **Inform** the Huntsville community about the *new faces of Aerospace Engineering* at Auburn University and the evolving direction of our research portfolio

- **Learn** from the community about present and *future directions of research* that are of significant national interest

- **Identify** specific areas where AE faculty can engage in impactful and transformative research and scholarship

- **Build Long-Term Partnerships** with the community in regards to both *research and education*
Today’s Line-Up

9:30 AM
Aerospace Systems & Modeling

Hartfield  Nichols  Chakraborty (Fall 2018)

11:00 AM
Experimental Fluid Dynamics & Propulsion

Raghav  Scarborough  Thurow
Today’s Line-Up

1:30 PM
Structures & Materials

Celestine
Agrawal
Mailen

3:00 PM
Space Technology

Thurow
Hirabayashi
Guzzetti
(Spring 2019)