

# Undergraduate Program in **AEROSPACE ENGINEERING**

## Facts About AE@UB

- Full-time faculty: 40
- The average entry-level salary for AE BS positions is **\$70,098**. The median annual wage for AEs is **\$118,610**
- Degrees offered: BS, MS, PhD
- Double major in Aerospace and Mechanical Engineering in 4.5 years
- Minor in Manufacturing
- Minor in Robotics

## Applications Big and Small

Aerospace engineering includes aeronautics and astronautics applications (subsonic and supersonic aircraft, unmanned aircraft systems, satellites, space vehicles, space station, etc.), as well as aerospace-related component development (design of structures, materials, devices, and instruments), and vehicle and propulsion system design.

## Aerospace Engineers Make Firsts

As an aerospace engineer, you could be part of a team that is the first to:

- Launch a rocket putting astronauts on Mars
- Design a permanent habitat in space
- Develop new hypersonic propulsion technology
- Build a super-mileage solar-powered aircraft

## Employers

UB AE graduates have joined top employers worldwide, in both industry and government laboratories, including: NASA, Advanced Space, SpaceX, Air Force Research Laboratories, National Transportation Safety Board, Boeing Company, Calspan Corporation, Honeywell Satellite Systems Operation, Lockheed-Martin Corporation, Moog Aircraft Group, Orbital Sciences Corporation, and United Airlines.



## Curriculum Overview

### [ FRESHMAN-SOPHOMORE ]

The first two years build the basic science and mathematical skills that you'll need for the practice of aerospace engineering: chemistry; two semesters of physics; math through differential equations; mechanics and dynamics of rigid bodies, and mechanics of deformable bodies. Aerospace engineering courses start in the sophomore year.

### [ JUNIOR ]

The third year develops the engineering sciences and provides basic knowledge in the areas of fluid mechanics and heat transfer, computers and instrumentation, materials, gas dynamics, systems analysis, and computer-aided design (CAD). Hands-on laboratories including a new aerodynamics lab build practical skills from the classroom instruction.

### [ SENIOR ]

With the background acquired in the junior year, students are equipped to study design theory and methods and to engage in a capstone design experience. The material learned in the first three years comes together synergistically to emphasize aeronautical and astronautical topic areas.

## Employment Outlook

Employment of aerospace engineers is projected to grow 8% through 2030, with more than 5,100 additional aerospace engineers required nationally.

(Source: <https://www.bls.gov/ooh/architecture-and-engineering/aerospace-engineers.htm#tab-1>)

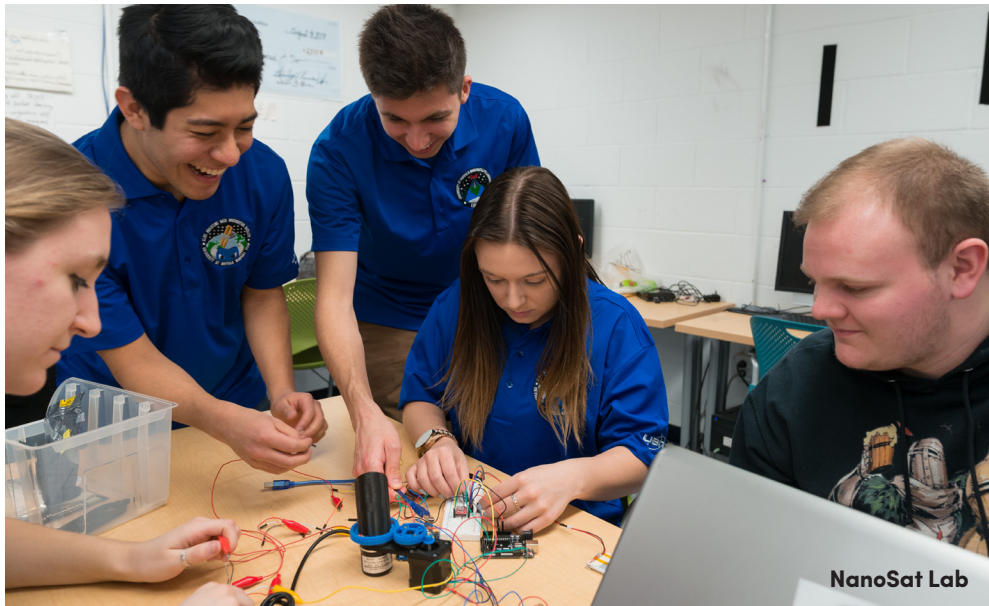
## Aerospace Engineers Explore Frontiers

Throughout history, aerospace engineers have broken technological frontiers, building and creating the previously unimaginable. One hundred years after the first flight, aerospace engineers have pushed the boundaries of exploration and pursue exciting opportunities in cutting-edge fields beyond traditional aerospace applications in airplanes, spacecraft, and rocket science.



## Did You Know?

You can get paid to go to graduate school. Several of our graduates go on to pursue advanced degrees. Some choose to continue their studies here, while others attend other elite graduate programs including MIT, Stanford, Cornell, and Texas A&M. Top UB graduate students receive full tuition scholarships, and a modest stipend to support their study.



## Student Excellence



**Anoop Kiran** is an undergraduate earning a Bachelor of Science in aerospace engineering and plans to graduate in June 2022. Anoop has actively engaged with faculty in the department to obtain hands-on research experiences in various laboratories. He is involved with the student chapter of AIAA and the UB Pilots Association. He received a 2020 Leaders in Excellence Scholarship from the UB Engineering and Applied Sciences Alumni Association (UBEAA) and is a recipient of the 2021 Barry Goldwater Scholarship.

*"The SEAS Professional Development Blueprint has served as an invaluable reference, assisting me in making informed decisions on career preparation and graduate school."*

## Work Opportunities for Students

Students can gain industrial knowledge experience during their undergraduate studies, through engineering-related summer employment or through 3-credit internships. Many graduates claim that these experiences gave them a leg up on the job search and let them hit the ground running when they started working.

## Undergraduate Research

Undergraduates have the opportunity to work with AE faculty on research addressing important societal needs, such as systems to remove space debris, hypersonic propulsion systems, satellite control, and drone development.

As an example, a team of UB engineering students is currently competing in the University Nanosat Program, an Air Force sponsored competition among 10 universities, in which students design and build a small satellite. Students are involved with and responsible for every aspect of the program, including design and fabrication, and complete a series of engineering reviews to compete for a launch into orbit.

## Student Clubs and Activities

A number of student-led clubs and activities are available including:

- AIAA: American Institute of Aeronautics & Astronautics
- SAE: Society of Automotive Engineers
- SWE: Society of Women Engineers
- UB Nanosat Lab
- UB SEDS: Students for the Exploration and Development of Space

To apply, please visit [admissions.buffalo.edu](https://admissions.buffalo.edu)

## Successful Alumni



**Dr. Lesley Weitz** (BS '02) is a lead simulation and modeling engineer for the MITRE Corporation's Center for Advanced Aviation System Development,

a federally funded research and development center that supports the mission of the Federal Aviation Administration. Weitz is a technical lead in the development of an international avionics standard to create more precise spacing, or intervals, between aircraft that will increase efficiency of air traffic operations in the U.S. and Europe.

## Award-Winning Faculty

- 2 Endowed Professors
- 16 Professional Society Fellows
- 8 NSF Career Awards
- 4 DoD Young Investigator Awards
- 1 SUNY Distinguished Professor
- 1 SUNY Distinguished Teaching Professor
- 2 SUNY Chancellor's Awards for Excellence in Scholarship and Creative Activities
- 5 SUNY Chancellor's Awards for Excellence in Teaching
- 1 UB Distinguished Professor
- 5 UB Exceptional Scholar Sustained Achievement Awards
- 3 UB Exceptional Scholar Young Investigator Awards
- 2 UB Teaching Innovation Awards
- 2 UB President Emeritus and Mrs. Myerson Award for Distinguished Undergraduate Teaching and Mentoring

## CONTACT INFO

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