

UB Department of Mechanical and Aerospace Engineering (MAE) BS in Aerospace Engineering (AE)

Facts About AE@UB

- Full-time faculty: 27
- Average BS AE starting salary: \$56,311, median income for AE's is \$92,520
- Degrees offered: BS, MS, PhD
- Double major in Aerospace and Mechanical Engineering in 4½ years
- A five-year BS Aerospace Engineering + MBA degree is also available

Aerospace Engineering: Applications Big and Small

Aerospace engineering includes aeronautics and astronautics applications (subsonic and supersonic aircraft, satellites, space shuttle, space station, etc.), as well as aerospace-related component development (design of structures, 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 a shape-changing ultra-high strength material
- Build a super-mileage solar-powered aircraft

Employers

UB AE graduates have joined top employers worldwide, in both industry and government laboratories, including: NASA, 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.

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.

Overview of Curriculum

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 the 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 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.



Did You Know?

Aerospace engineers are expected to have 10 percent growth in employment over the decade.

(Source: <http://www.bls.gov/oco/ocos027.htm>)

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.



UB Department of Mechanical & Aerospace Engineering (MAE)

BS in Aerospace Engineering



Study of non-premixed flame-wall interaction using vortex ring configuration is done for the first time at the Computational Fluid Dynamics Laboratory.

Student Excellence



Bradley Cheetham received the 2008 Barry M. Goldwater Scholarship, awarded to sophomores and juniors who plan to pursue advanced degrees in science and engineering. Bradley also completed the prestigious NASA academy at Goddard Space Flight Center. He recently finished his undergraduate Mechanical and Aerospace Engineering degree and is now pursuing an AE master's degree at the University of Colorado.

"The faculty members at UB have been great. They are always willing to sit down and listen to student ideas and I have thoroughly enjoyed working with multiple professors

on projects. Looking to the future, my experience at UB has made anything possible."

Work Opportunities

Students can gain industrial knowledge experience during their undergraduate studies, through engineering-related summer employment or through 3-credit co-op internships. By participating in UB Engineering's unique Engineering Career Institute (ECI), students learn valuable, practical knowledge. 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

In addition to being a terrific undergraduate university, UB is also a great research institution. Research opportunities abound in AE, and our faculty are at the frontiers of knowledge in diverse areas, including dynamics, control and mechatronics, design and optimization, fluid and thermal sciences, and computational and applied mechanics.



"UB was my first and only choice for my undergraduate degree for several reasons. Since the School of Engineering offers a wide variety of classes and concentrations, I didn't have to worry about transferring schools if I didn't pick the area of study that was right for me. There are plenty of clubs and leadership opportunities to help anyone build an impressive resume, gain priceless life experiences, and meet some great friends. The MAE faculty provided me with the critical tools

needed to succeed in academia, research, and industry."

— **Kurt Cavalieri**, BS AE & ME '08, is pursuing an AE master's degree at Texas A&M University. During his senior year, he was president of the prestigious engineering honor society Tau Beta Pi's NY Nu Chapter.

Student Clubs and Activities

Every year, UB's chapters of the American Institute of Aeronautics and Astronautics (AIAA) and Students for the Exploration and Development of Space (SEDS) compete in national competitions in design and construction. Students always learn new methods in composite development and application. If you want to get experience in a design team, build team, and/or a leadership position, these groups are for you.

"AIAA has two main projects: Design-Build-Fly and Microgravity research. We also participate in a Bot Wars competition, various campus events and activities, and our members can learn to fly using our RC aircraft. New ideas are welcome, so do not hesitate to bring your own. We have numerous alumni from AIAA who are now working in many of the top aerospace companies such as Moog Inc. and Lockheed Martin, no doubt from their experiences with the club."

—**Joshua Weisberger**, AIAA President, 2010-2011

"UB-SEDS is a completely student-run organization promoting space and its related activities. The organization is continually growing and adding new projects. Current projects include rocketry, propulsion, astronomy, and educational outreach. Students also attend conferences, discuss current space activities, host speakers, and much more. If you are interested in a club that is open to your ideas and allows you to dream big, then come join us."

—**Andrew Dianetti**, SEDS President, 2010-2011



Successful Alum

Ephraim Garcia (BS '85 MS '88 PhD '90). Dr. Garcia was named an Office of Naval Research Young Investigator in 1995, appointed a Presidential Faculty Fellow by President Clinton in 1993, and is a four-time recipient of a Summer Faculty Fellowship award from the Air Force Office of Scientific Research. He is currently an associate professor in Mechanical and Aerospace Engineering at Cornell University.

Award-Winning Faculty

In recent years, our faculty members have earned several prestigious awards:

- 1 NSF Presidential Faculty Fellows Award
- 6 NSF Career Awards
- 1 NSF Accomplishment-based Creativity Award
- 2 NIH Quantitative Research Development Awards
- 2 Office of Naval Research Young Investigator Award
- 2 SUNY Distinguished Teaching Professors
- 7 Chancellor's Award for Excellence in Teaching
- 6 Society of Automotive Engineers Teetor Educational Awards

To apply, please visit admissions.buffalo.edu.

CONTACT INFORMATION

Gary F. Dargush
Chair
(716) 645-2593
maechair@buffalo.edu

Paul E. DesJardin
Director of Undergraduate Studies
(716) 645-1467
ped3@buffalo.edu

Department of Mechanical and Aerospace Engineering
318 Jarvis Hall, University at Buffalo, State University of New York, Amherst, NY 14260-4400