



OUTSTANDING DESIGN

Outstanding design requires a comprehensive background in all of the areas of study associated with Aerospace Engineering.

- Aerodynamics: Subsonic, supersonic, and computational aerodynamics are all part of the aerospace engineering program at Virginia Tech. Students learn to use state-of-the-art computational and experimental facilities for flows from 10 mph to Mach 10.
- Structures: Light yet super-strong, modern aerospace structures employ composite materials and innovative geometries. Aerospace engineering students learn the latest experimental and numerical techniques for structural analysis.
- Propulsion: From props to jets to space propulsion, you will use your background in physics, thermodynamics, and fluid dynamics to understand and analyze the propulsion systems of the future.
- Flight Mechanics: Astromechanics, aircraft performance, and stability and control are all needed to understand how to make the designs of tomorrow go faster, further, and higher or deeper into space.
- Electives: Other courses include engineering design optimization, automatic flight control, computational aerodynamics, computational structural analysis, and aerospace manufacturing.



PROGRAM OBJECTIVES

The undergraduate programs' educational objectives are that graduates will combine their undergraduate education and post-graduation experience to:

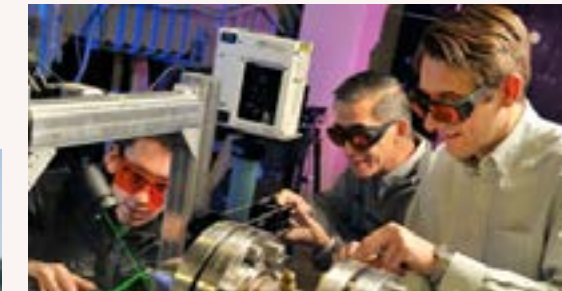
- Be successful in entry-level professional positions or in graduate study in aerospace and ocean engineering.
- Apply the theoretical, experimental and computational fundamentals of science and engineering to professional practice, advanced study and continuing professional development.
- Apply their broad understanding of fluid dynamics, vehicle dynamics and control, propulsion and structures to design and synthesis of aerospace or ocean systems in a team environment.
- Communicate their work effectively to both experts in their field and non-technical individuals.

ACCREDITATION

ABET is the recognized accreditor for college and university programs in applied science, computing, engineering, and technology. Among the most respected accreditation organizations in the U.S., ABET has provided leadership and quality assurance in higher education for over 75 years.

The Kevin T. Crofton Department of Aerospace and Ocean Engineering is unique in offering Bachelor of Science degrees in both aerospace engineering and ocean engineering. Both of these engineering programs are accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

KEVIN T. CROFTON DEPARTMENT OF AEROSPACE AND OCEAN ENGINEERING
460 OLD TURNER STREET • 215 RANDOLPH HALL
BLACKSBURG, VA 24061
PHONE: 540-231-6611 • www.aoe.vt.edu



YOUR ROLE IN SHAPING THE FUTURE AWAITS

Some of the greatest engineering achievements of the 20th century include airplanes, spacecraft, computers and of course, the internet. Complex issues such as sustainability, health and the security of the world are expected to be the top challenges for future generations. Aerospace engineers will play a vital role in reimagining the way education and technology can work together as a force of good in the world.

- The Kevin T. Crofton Department of Aerospace and Ocean Engineering is ranked as one of the Top 15 aerospace engineering schools by U.S. News and World Report. Our aerospace engineering program is also ranked #5 by Center for World University 2018 rankings, and #11 by the 2018 Shanghai Global Rankings.
- Engage in an exciting and challenging curriculum. While courses on a wide range of traditional aerospace subjects are offered, you will also explore modern-day issues such as cyber-physical systems and distributed control, aero/hydroacoustics, advanced multifunctional composites and ethics in autonomous systems.
- Learn from leading aerospace engineering faculty who bring real-world experience from the space and aviation industries. Undergraduates are able to gain hands-on experience in a wide variety of ongoing research projects in the department.

UNDERGRADUATE PROGRAMS

The Kevin T. Crofton Department of Aerospace and Ocean Engineering offers a bachelor of science degree in aerospace and ocean engineering. Students may major in either aerospace engineering or ocean engineering. These degrees share many course requirements because the two curricula cover a broad range of common interests and offer a wide range of technical electives. Students with an interest in both majors may choose to combine the programs in a double major with either aerospace or ocean as their primary major.

The department also offers a multidisciplinary minor in naval engineering, which is open to students in the College of Engineering.

COLLABORATIVE LEARNING

Our undergraduate programs emphasize propulsion, aero/hydrodynamics, stability and control, vehicle performance, and vehicle structures, which leads to a year-long capstone design experience in the senior year. Aerospace engineering design courses use the group design process to both better simulate the way design is done in the real world and promote the benefits of collaborative learning.

By designing in groups, you and your fellow aerospace engineering majors learn to build on one another's strengths and subdiscipline expertise, work with others toward a single goal, and make the compromises needed to optimize a good design into an award-winning design.

EXCELLENCE IN INSTRUCTION

The faculty/student ratio in the aerospace engineering undergraduate major is about 1 to 19, allowing each faculty member to really get to know you. Our faculty brings diverse and extensive experience in aerospace industry design, NASA and federal government research, and flight-testing. Other developing fields, such as unmanned aerial systems, global positioning system (GPS), and cyberphysical security, enhance your classroom and lab experience.

AOE is home to a number of unique facilities, including Stability, Open-Jet, Boundary-Layer, Low Speed, Transonic, Supersonic, and Hypersonic Wind Tunnels; the Advanced Propulsion and Power Laboratory (APPL), Space@VT ground station networks, and the Kentland Experimental Aerial Systems Laboratory (KEAS).



DESIGN TEAMS

You will have many opportunities to get involved in design projects that challenge you to create and grapple with real-world industry innovations. Some of these opportunities come through the senior design capstone course while others are extracurricular.



Teams include AIAA Design, Build, Fly; RockSat-X; Orbital Launch Vehicle Team; Students for the Exploration and Development of Space (SEDS); Rocketry@VT; Moon to Mars Ice Prospecting Challenge; SailBot; and the Wind Turbine Team.

DESIGNED FOR STUDENT SUCCESS

AOE graduates have been highly successful in the aerospace and ocean fields. About 21% of our graduates continue their studies in graduate school, while most of the rest find excellent employment opportunities in the aerospace and related industries. Some also choose to go into related fields such as automotive engineering, structural engineering, environmental engineering, as well as into professions such as law or medicine. The department's long history and reputation for excellence have ensured that aerospace and ocean engineering graduates are recruited by industry even in difficult economic times.

UNDERGRADUATE TO GRADUATE DEGREE PROGRAMS

Aerospace and ocean engineering seniors who have an overall GPA of at least 3.3 may be eligible for Undergraduate/Graduate (UG/G) Status or Dual Status, allowing students to count up to 12 credits of coursework for both the undergraduate and graduate degree programs during the last semesters of their undergraduate degree.

Guidelines for the UG/G and Dual Status Programs are on the AOE website at www.aoe.vt.edu/graduate/advising/accelerated-masters-ugg.html

FOR MORE INFORMATION, VISIT OUR WEBSITE AT
www.aoe.vt.edu