



Aerospace Engineering AT RUTGERS

Does your imagination take flight at the thought of designing airplanes and space vehicles? Do you want to devise unmanned aerial systems or turbines for air and wave energy generation? Airplane and space vehicle design, propulsion, flight technology, aerodynamics and astrodynamics, aerospace materials and structures, aerospace modeling and simulations, and sensing and control of aerospace systems are all components of Rutgers' aerospace engineering degree.

Rutgers is the only public university in New Jersey to offer an Aerospace Engineering degree. Our ABET accredited, flexible program combines classroom and proactive learning experiences to deliver a broad, multidisciplinary education in the fundamentals of aerospace engineering including aircraft and spacecraft design; unmanned aerial systems; sensing and control of aerospace systems; and aerodynamics and astrodynamics.

Leading aeronautic organizations, including NASA and the New Jersey Space Grant Consortium as well as top aerospace companies such as Northrop Grumman, Marotta Controls, Lockheed Martin, and Boeing generate internship and career opportunities. Additionally, career prospects for program graduates extend beyond aeronautics and astronautics into sectors such as advanced manufacturing, energy, and automotive.

PROFESSIONAL OPPORTUNITIES

Design and build aircraft systems, space vehicles, and satellites

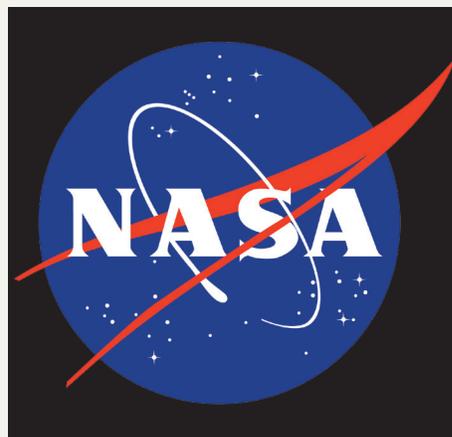
Conceptualize and model aerospace systems

Computationally analyze and prototype aerospace systems

Manufacture aerospace sub-system components

Develop systems and structures to promote space exploration

Pursue research and development in industry and government labs



THE FUTURE IS NOW

A student designed multi-mode hybrid drone delivery system was awarded a competitive NASA University Student Research Challenge grant. The project employs a collaborative system of two unmanned aerial vehicles (UAV)—a fixed-wing plane and a multirotor UAV—to address challenges related to long distance travel and accurate vertical movements.

DEGREES OFFERED AND CURRICULAR OPTIONS

BS

Concentration: Energy Systems

BS/MS or BS/ME Five-year Dual Degree

BS/MBA or BS/MBS Five-year Dual Degree

MS

ME

PhD



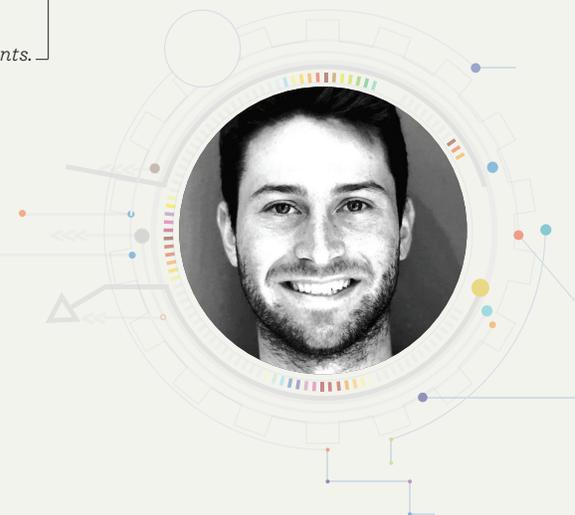
For more information, visit
mae.rutgers.edu

"Don't underestimate the value of working hard for good grades. There's really good value in putting your best foot forward."

Jack Thompson

RUTGERS
School of Engineering

Established in 1864, Rutgers University's School of Engineering is a vibrant academic community whose richly diverse students and faculty members are committed to globally sustainable engineering. Its mission is built on a commitment to fostering the integration of education and research to achieve transformational innovation that is ethically responsible. With seven academic departments representing key engineering disciplines, the School of Engineering is recognized around the world as comprehensive and leading-edge, training the next generation of innovators across a broad spectrum of professions.



Aerospace Engineering at Rutgers

PROGRAM HIGHLIGHTS

We have built on more than 50 years of success with our aerospace engineering certificate program to prepare engineers to take the lead in the aerospace industry. Now with our degree program students can take courses in spacecraft mission design, propulsion, mechanical control systems, system dynamics and controls, orbital mechanics, aerospace materials and structures, and aerospace modeling and simulations—as well as a range of internship and research opportunities.

The students work in teams to conceptualize, design, and manufacture aerospace system prototypes during a year-long senior year capstone design experience. Students also participate in professional organizations such as the American Institute of Aeronautics and Astronautics (AIAA) and compete in national and international competitions.

HANDS-ON ACTIVITIES

Guided by a faculty that includes aerospace engineering experts, students regularly engage in cutting-edge research in active flight control; computational flow dynamics and visualization; autonomous control; lunar and Martian

habitats; flexible robotic mechanisms; aerial micro vehicles; space situation awareness; air and water autonomous vehicles; and more.

They also have access to the Buehler Supersonic Wind Tunnel, as well as desktop and stand-alone subsonic wind tunnels.

COURSES OFFERED

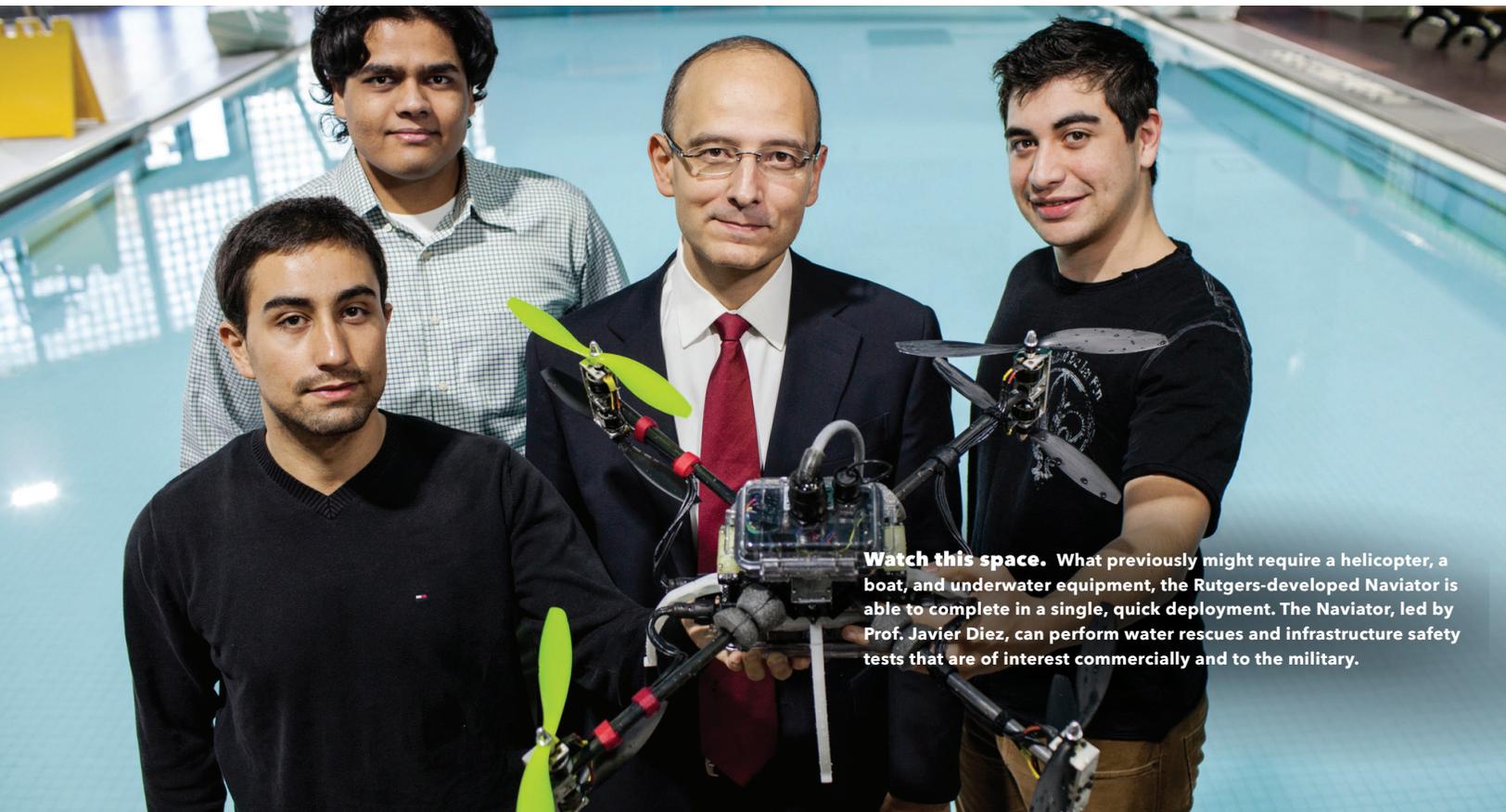
- Aerospace Materials
- Aerospace Structures
- Aerospace Propulsion
- Aerodynamics
- Aircraft Flight Dynamics
- Compressible Fluid Dynamics
- Orbital Mechanics
- Spacecraft Mission Design

RESEARCH FACILITIES AND CENTERS

- Emil Buehler Aerospace Laboratory
- Buehler Supersonic Wind Tunnel
- Smart Systems Laboratory (SSL)

With a focus on astrodynamics and space situational awareness with a focus on unstable and inactive space debris, **Prof. Xiaoli Bai** is working on **spacecraft guidance, control, and space robotics and unmanned aerial vehicle navigation** and control.

Prof. Onur Bilgen and Laurent Burlion are part of a Department of Energy funded program to develop new technologies for **floating offshore wind turbines**, using the discipline of control co-design.



Watch this space. What previously might require a helicopter, a boat, and underwater equipment, the Rutgers-developed Naviator is able to complete in a single, quick deployment. The Naviator, led by Prof. Javier Diez, can perform water rescues and infrastructure safety tests that are of interest commercially and to the military.