

# AERONAUTICS & ASTRONAUTICS

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AEROSPACE ENGINEERS USE THEIR KNOWLEDGE OF MATH AND SCIENCE FUNDAMENTALS AND APPLY THOSE SKILLS TO DESIGN, BUILD, AND TEST VEHICLES THAT FLY.



## UW A&A OPPORTUNITIES

Students can work in the Kirsten Wind Tunnel, a state-of-the-art commercial testing facility for flight vehicles.

Study abroad to France to learn about aviation & space and to attend the annual Paris Air Show.

All of our students participate in a culminating capstone design project with many industry- based options

## WHAT DO AEROSPACE ENGINEERS DO?

Aerospace engineers apply math and science fundamentals to design, build and test vehicles that fly. Aeronautics applies to vehicles that fly within the Earth's atmosphere, for example, airplanes and helicopters. Astronautics focuses on vehicles that fly outside of the Earth's atmosphere, for example, space shuttles, satellites and more. The field of aeronautics and astronautics also goes beyond flight, such as in the study of aerodynamics in automobiles and water vehicles.

## WHAT PROBLEMS ARE AEROSPACE ENGINEERS TRYING TO SOLVE?

UW A&A specializes in four main sub disciplines: controls, fluids, structures, and plasma science.

- How do we make navigation systems on vehicles more autonomous so we can explore places far away for longer periods of time?
- How can we address ice formation on vehicles so it doesn't interfere with its operation?
- How can we shape the fuselage and wings of an aircraft so the vehicle is more fuel efficient?
- How can we deliver drugs right to the site they're needed AND produce them in a way that people can afford to take them?
- Can we optimize this process to be more economical, environmentally friendly, and safe?

## WHERE DO A&A ALUMNI WORK?

**Industry** - The vast majority of students work in industry right after graduation. Our alumni work under a variety of job titles including aerodynamics engineer, development engineer, design and analysis engineer, engineering consultant, manufacturing engineer, propulsion engineer, stress engineer, structures engineer, systems engineer and more.

*Aerojet Rocketdyne, Alaska Airlines, Amazon Prime Air, Blue Origin, The Boeing Company, Honeywell Aerospace, Janicki Industries, Millennium Space Systems, NASA, SpaceX, Systima Technologies*

**Graduate School** - Some of our students choose to go to graduate school after graduation. Students pursue a master's degree to explore a particular sub discipline. Others continue on to a Ph.D. degree to research in a very narrow and specific aerospace topic.

*California Institute of Technology, Columbia University, Northeastern University, Stanford University, University of Maryland, University of Michigan, University of Southern California, UW*

**Military Service** - We are also proud of our students who choose to serve in the United States military after graduation.

*U.S. Air Force, U.S. Army, U.S. Coast Guard, U.S. Marine Corps and U.S. Navy*

## SENIOR CAPSTONE DESIGN PROJECTS

The senior capstone project is one of the most intensive, memorable, and eye-opening experiences in the undergraduate program. Recent projects include:

- > Retrofitting a former military aircraft to be used to fight wild fires.
- > Optimizing an existing UAV for conservation purposes.
- > Exploring the complexities of 3D printing while in space.
- > Designing a mini-satellite for use in exploring space.

## WHAT MAKES A&A SPECIAL?

A&A is a small, close-knit department with a cohort model. Our students form close relationships with each other and with their advisers, making it easy to form groups. Our small class sizes enable students to focus on community, solving innovative problems, and building careers.

Our students are involved with a variety of registered student organizations including DBF (Design, Build, Fly) – the student-led aircraft building competition group and SARP (Society for Advanced Rocket Propulsion) – the student-led rocket building competition group. Students are also involved in the student chapter of the AIAA (American Institute of Aeronautics & Astronautics), a professional society for aerospace engineering. They are also involved with WoA (Women in Aerospace), a group created to address diversity issues and to provide outreach to young women wanting to explore the field.



## HOW CAN I LEARN MORE?

If you think A&A might be for you, we encourage you join one of the A&A affiliated registered student organizations. You can also start doing research in a lab even before placing into a major.

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