Aerospace Engineering

Wichita State University grew up with the pioneers in early aviation and became a pioneer in its own right in 1928 by becoming the 6th university in the U.S. to offer a bachelor’s degree in aeronautical engineering.

Wichita is called the “Air Capital of the World” because it is one of the world’s largest producers of aircraft through Airbus, Cessna, Bombardier Learjet, Beechcraft, and Spirit Aerosystems. Thus, it is an excellent place to study aerospace engineering. Both WSU and its students benefit from a location rich in aviation heritage and current technology. Our graduates work in Wichita and around the country for companies such as Boeing, Blue Origin, General Electric, Lockheed, Scaled Composites, SpaceX and Northrup Grumman.

Aerospace Engineering at WSU

Our aerospace engineering program provides an array of courses that will enable students to participate in the design and analysis of aircraft and spacecraft. We offer courses in the following general fields:

- Propulsion - the study of the systems associated with producing force for motion
- Structures - the study of the structural components of the flight vehicles
- Aerodynamics - the study of the fluid effects on a flight vehicle
- Stability and control - the study of vehicle behavior and systems required to control it

The aerospace engineering curriculum is designed to develop skills in these four areas, as well as in math, physical science, general engineering, digital computation and written and oral communication. When you become a senior, you will be part of a design team in the two-course senior design sequence. You will design, build, test and fly your own aircraft or rocket.

Internships & Cooperative Education

You may want to participate in cooperative education or internships, a voluntary program in which you’ll have the opportunity to integrate formal coursework with periods of relevant off-campus employment. Our co-op students have worked at such facilities as the NASA Johnson Space Center, NASA Dryden Flight Research Center, Spirit Aerosystems, Cessna, Learjet, Beechcraft and the Federal Aviation Administration.

Laboratory and Facilities

The aerospace engineering department has well-equipped laboratories for required courses and student design projects. You will have access to facilities, including many in the National Institute for Aviation Research, which are among the finest found in universities nationwide. These include: four wind tunnels; a water tunnel; a structures lab, a prototyping lab; a controls lab, an aeronautics lab and a flight simulation lab. As an engineering student, you will also have access to design and simulation software in our computer studios, computational hub and virtual instrumentation lab in the new Experiential Engineering Building on WSU’s Innovation Campus.

Engineering Student Engagement

When you enroll in an engineering program at WSU, you join a community where faculty, staff and fellow students work together to help you reach graduation. The Engineering Student Success Center will help you succeed academically, personally and professionally through engagement in our Engineering Living Learning Community (LLC), Mentor UPP (Undergraduate Peer Partners) program, and GEEKS (Great Expectations: Engineering Kansas Scholars) tutoring.

Aerospace engineering students are encouraged to participate in extracurricular organizations such as the student chapter of the American Institute of Aeronautics and Astronautics (AIAA), the High-Altitude Balloon Team, Rocket Club, and the Society of Women Engineers (SWE). If you’re eligible, you may join Sigma Gamma Tau, the aerospace engineering honors society, and Tau Beta Pi, the honor society for all areas of engineering.

Advising

When you choose to major in aerospace engineering, your academic success and faculty advisors will help you plan your course of study and will outline specific requirements for degree completion. It is important that you complete the basic skills classes, Calculus I and Physics for Scientists I before the completion of 48 college hours.
General Education Requirements

**Basic Skills (9 hours minimum)**
Must be completed in the first 48 college hours with a grade of C or better.
- College English Composition (Eng. 100 or 101 and 102) - 6 credit hours
- Public Speaking (Communication 111) - 3 credit hours

**Fine Arts, Humanities, and Social and Behavioral Sciences (18 hours minimum)**
- One introductory course from a fine arts discipline - 3 credit hours
- One introductory course from a humanities disciplines - 3 credit hours
- One introductory course from a social and behavioral sciences discipline - 3 credit hours
- One advanced further study course from a humanities or social and behavioral sciences - 3 credit hours
- Philosophy 385 Engineering Ethics - 3 credit hours

**Mathematics and Natural Sciences**
- Calculus I, II and III - 13 credit hours
- Ordinary Differential Equations - 3 credit hours
- Physics for Scientists I and II - 8 credit hours
- University Physics I Lab - 1 credit hour
- General Chemistry I - 5 credit hours
- Natural Science Elective - 3 credit hours

**Major Courses**
- Engineering Graphics - 3 credit hours
- Engineering Digital Computation - 3 credit hours
- Statics and Dynamics - 6 credit hours
- Fundamentals of Atmospheric Flight - 3 credit hours
- Mechanics of Materials - 3 credit hours
- Circuits I - 4 credit hours
- Engineering Economy - 3 credit hours
- Thermodynamics - 3 credit hours
- Aerospace Propulsion - 3 credit hours
- Materials Engineering - 3 credit hours
- Aerodynamics I - 3 credit hours
- Aerodynamics II - 3 credit hours
- Introduction to Space Dynamics - 3 credit hours
- Experimental Methods in Aerospace - 3 credit hours
- Flight Dynamics and Control - 3 credit hours
- Flight Structures I and II - 6 credit hours
- Flight Control Systems - 3 credit hours
- Aerospace Design I and II - 8 credit hours
- Technical Electives - 9 credit hours

Aerospace Faculty

Brandon Buerge (PhD, Washington University). Aerodynamics, design, and airships
Animesh Chakravarthy (PhD, Massachusetts Institute of Technology). Flight dynamics & controls
Atri Dutta (PhD, Georgia Institute of Technology). Astronautics and dynamics & control
Klaus A. Hoffmann (PhD, University of Texas at Austin). Computational fluid dynamics, aero thermodynamics, and hypersonics
Walter J. Horn (PhD, University of Texas at Austin). Solid mechanics, structures, composites, aeroelasticity
Linda Kliment (PhD, Wichita State University). Aerodynamics
L. Scott Miller (PhD, Texas A&M University). Experimental aerodynamics, laser velocimetry, airfoil and aircraft design, rotor aerodynamics
Roy Y. Myose (PhD, University of Southern California). Experimental aerodynamics and structures, propulsion, astronautics
Michael Papadakis (PhD, Wichita State University). Computational, experimental, and theoretical aerodynamics
K. Suresh Raju (PhD, Wichita State University). Aircraft structures and solid mechanics
Syed Raza (MS, Air Force Institute of Technology). Aerodynamics and wind energy
Kamran Rokhsaz (PhD, University of Missouri-Rolla). Theoretical and applied aerodynamics, design, flight mechanics
Elizabeth Rollins (PhD, Texas A&M University). Flight dynamics and controls and aerodynamics
Bhisham Sharma (PhD, Purdue University). Solid mechanics and dynamic, acoustics, mechanics of composite/phononic/metamaterials and advanced manufacturing
Nicolas Smith (PhD, Purdue University). Solid mechanics, composite materials, micromechanics and processing simulation
James E. Steck (PhD, University of Missouri-Rolla). Flight dynamics and controls, neural networks, acoustics
John Tomblin, Executive Director - NIAR (PhD, West Virginia University). Solid mechanics, structures
Anthony Vizzini, Vice President for Academic Affairs (PhD, Massachusetts Institute of Technology). Structures
Charles Yang (PhD, Louisiana State University). Composites and machine design.

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For more information on Aerospace Engineering at WSU visit wichita.edu/aerospace or call (316) 978-3410.