

Aerospace Engineering, MS

Department: Mechanical and Aerospace Engineering Department

College: College of Engineering

Overview

About This Degree

Aerospace engineers develop new technologies in the field of aviation, space exploration, and defense systems. They specialize in the design, development, testing, and maintenance of both commercial and military aircraft, spacecrafts and their components, as well as satellites and missiles.

The Department of Mechanical and Aerospace Engineering offers an MS degree in aerospace engineering. Sometimes called Utah "Space" University, USU is ranked number two in the nation (2010) when it comes to funding for space research, according to the National Science Foundation. This funding, along with stellar faculty, has given the USU aerospace engineering program national recognition.

The USU rocket team, consisting of graduate and undergraduate students, took home the grand prize at NASA's University Student Launch Initiative the last three years in a row. Also, through USU's Space Dynamics Lab, USU holds the world record for the most student experiments sent into space.

Career Options

Graduates in aerospace engineering can pursue careers in the following areas:

- Aircraft manufacturing
- Spacecraft manufacturing
- Commercial airlines
- Federal agencies – NASA, Department of Defense, all branches of military
- Defense industry
- Space industry

Graduates are also qualified as applicants to enter prestigious doctoral programs.

What it takes

Admissions Requirements

Students must have a bachelor's degree from an accredited institution in mechanical engineering, aerospace engineering, manufacturing engineering, or a closely related engineering discipline. Students who do not have a bachelor's degree in an appropriate engineering discipline may be admitted with nonmatriculated status (not officially accepted to the program) and required to complete remedial requirements. Once these courses are completed, students may be officially admitted to the program.

Students must also be well acquainted with either the FORTRAN or C programming language.

Application Requirements:

- Complete the [online application](#)
- Pay the \$55 application fee
- GRE scores: Quantitative 70th percentile, and Verbal 40th percentile
- Have a 3.3 or higher GPA on your last 60 semester or 90 quarter credits
- Provide transcripts of all college/university credits
- Provide three contacts for letters of recommendation

International students have [additional admissions requirements](#).

Admissions Deadlines

The department has the following deadlines:

- Fall semester - February 20
- Spring semester - August 1
- Applications are accepted after these deadlines, but students will not be considered for financial assistance.
- International students are encouraged to apply much earlier to allow time for Visa applications.

Master's Degree Plan Options

Students can receive the MS by pursuing one of three options:

- In the **Plan A** option, students complete graduate-level coursework and must write a thesis.
- The **Plan B** option requires the production of a paper or creative work of art and is expected to reflect equivalent scholarship standards as a thesis.
- A third option, **Plan C**, does not involve a thesis or a defense meeting and is comprised of coursework only.

Financial Assistance

A variety of funding opportunities are available, including [fellowships](#), [scholarships](#), [assistantships](#), [tuition awards](#), and [travel support](#). Additionally, students may be eligible for subsidized [health insurance](#) through qualifying assistantships.

Program Requirements

[Click here](#) to see course requirements for the **Master of Science**.

Contact

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Get Involved

Professional Organizations, Honor Societies, and Clubs

American Institute of Aeronautics and Astronautics: The AIAA is a national professional society with more than 34,000 members serving the aerospace engineering community. The mission of the AIAA is to serve the profession and to benefit the institute's individual members and member institutions.

Society of Women Engineers: SWE is a national society whose mission is to stimulate women to achieve full potentials in careers as engineers and leaders, expand the image of the engineering profession as a positive force in improving the quality of life, and demonstrate the value of diversity. Members not only enjoy the association with each other but also enjoy various activities and service projects designed to support female students majoring in engineering.

Tau Beta Pi: This is the only engineering honor society representing the entire engineering profession. It is the nation's second oldest honor society, founded at Lehigh University in 1885 to recognize those exhibiting distinguished scholarship and exemplary character as students in engineering, or by their attainments as alumni in the field of engineering, and to foster a spirit of liberal culture in engineering colleges.

Labs, Centers, Research

Center for Atmospheric and Space Sciences: CASS is recognized nationally and internationally as a progressive research center with advanced space and upper atmospheric research programs. CASS scientists are tackling the adverse consequences of space weather. Undergraduate and graduate students are involved in numerous research projects in CASS that provide opportunities to program computers, analyze data, and build instrumentation.

Center for Control of Flows in Manufacturing: This center focuses on the application of flow control technologies, commonly studied for aerospace applications, as applied to manufacturing processes.

Center for Self-Organizing and Intelligent Systems: CSOIS is a multi-disciplinary research group at USU that focuses on the design, development, and implementation of intelligent, autonomous mechatronic systems, with a focus on ground vehicles and robotics.

Center for Space Engineering: CSE is a multi-disciplinary group of faculty at USU involved in space technology, systems, and science. The center brings together academics, industry, and government to advance the understanding of the space environment and to train the next generation.

Experimental Fluid Dynamics Laboratory: The EFDL encompasses 3,000 square feet of laboratory space and is equipped with the latest in velocity diagnostics, particle sizing instrumentation, data acquisition equipment, and imaging systems.

Materials Processing and Testing Laboratory: With more than 4,000 square feet of lab space, MPTL houses a complete set of modern materials processing and test equipment. With funded projects from NSF, NASA, and industry, MPTL has developed a significant research and education program in materials processing, thermo-mechanical properties, and microstructure characterization.

Mechanical Properties Research Laboratory: The MePRL researches mechanical properties evaluation and modeling for metals, polymers, and composites based on multiscale experiments and simulations.

Micro/Nano Mechanics Laboratory: The Micro/Nano Laboratory explores and investigates damage evolution in material under different types of environments using experimental and modeling techniques. Advanced mechanical testing facilities allows multi-scale experiments of material under different types of loading and temperatures.

Rocky Mountain NASA Space Grant Consortium: RMNSGC is one of 52 National Space Grant Consortia in the United States. As a member of the consortium, USU has awarded more than 100 fellowships to students interested in aerospace-related education and careers. The majority of Space Grant student awards include a mentored research experience with university faculty and NASA scientists, engineers, and technologists.

Space Dynamics Laboratory: SDL is known for sending 500+ successful experiments into space and brings in \$54 million per year in revenue, the majority coming from grants, contracts, and appropriations. SDL's expertise in the development of sensors and calibration, small satellites and real-time intelligence has made it an internationally known organization in the space arena.

Space Weather Center: SWC is developing innovative applications for mitigating space weather in technical systems. The ionosphere is a key region that affects communication and navigation systems of the space environments that are affected by space weather. The USTAR initiative is developing products to reduce adverse effects of the ionosphere on these types of systems.

Thermophysical Properties Research Laboratory: Thermophysical properties, such as thermal conductivity, thermal diffusivity, heat capacity, and melt viscosity, are essential for the development of advanced materials. A major thrust of the research in TPRL is for fuels and materials in nuclear applications and is closely coordinated with the Idaho National Lab of the U.S. Department of Energy.

