Aerospace Engineering (Astronautics), BSE

ESAEASBSE

Program description

The Bachelor of Science in Engineering program in aerospace engineering provides students with an education in technological areas critical to the design and development of aerospace vehicles and systems.

The astronautics concentration curriculum covers:

- attitude determination and control
- elective topics in aeronautics
- gas dynamics
- orbital mechanics
- rocket propulsion
- space environment
- space structures
- telecommunications

Students in the astronautics concentration culminate their major study with a capstone design project that incorporates the multiple disciplines involved in the creation of a space-going vehicle.

Students in the program are expected to attain the following outcomes:

1. an ability to identify, formulate and solve complex engineering problems by applying principles of engineering, science and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs, with consideration of public health, safety and welfare, as well as global, cultural, social, environmental and economic factors
3. an ability to communicate effectively with a variety of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Accredited by the Engineering Accreditation Commission of ABET, https://www.abet.org, under the General Criteria and the Aerospace Engineering Program Criteria.

STEM-OPT for international students on F-1 visas

This program may be eligible for an Optional Practical Training extension for up to 24 months. This OPT work authorization period may help international students gain skills and experience in the U.S. Those interested in an OPT extension should review ASU degrees that qualify for the STEM-OPT extension at ASU's International Students and Scholars Center website.

The OPT extension only applies to students on an F-1 visa and does not apply to students completing a degree through ASU Online.

At a glance

- **College/school:** Ira A. Fulton Schools of Engineering
- **Location:** Tempe

- **Second language requirement:** No
- **STEM-OPT extension eligible:** Yes
- **First required math course:** MAT 265 - Calculus for Engineers I
- **Math intensity:** Substantial 

Curriculum

View 2025 - 2026 curriculum View curriculum archives

Concurrent program options

Students pursuing concurrent degrees (also known as a “double major”) earn two distinct degrees and receive two diplomas. Working with their academic advisors, students can create their own concurrent degree combination. Some combinations are not possible due to high levels of overlap in curriculum.

Accelerated program options

This program allows students to obtain both a bachelor's and master's degree in as little as five years. It is offered as an accelerated bachelor's plus master's degree with:

Aerospace Engineering, MS

Astrophysics and Astronomy, MS

Exploration Systems Design (Instrumentation), MS

Exploration Systems Design (Sensor Networks), MS

Exploration Systems Design (Systems Engineering), MS

Exploration Systems Design, MS

Mechanical Engineering, MS

Robotics and Autonomous Systems (Mechanical and Aerospace Engineering), MS

Acceptance to the graduate program requires a separate application. Students typically receive approval to pursue the accelerated master’s during the junior year of their bachelor's degree program. Interested students can learn about eligibility requirements and how to apply.

Admission requirements

General university admission requirements:

All students are required to meet general university admission requirements.
First-year | Transfer | International | Readmission

Additional requirements:

The admission standards for majors in the Ira A. Fulton Schools of Engineering, shown below, are higher than minimum university admission standards. International students must meet the same admission standards, with the possible additional requirement of a minimum English language proficiency test score. If the university requires an English proficiency test score from the applicant, then admission to engineering requires a minimum TOEFL iBT score of 79 (internet-based test, taken in a testing center), a minimum IELTS score of 6.5, a minimum PTE score of 58, a minimum Duolingo English score of 105, or a minimum Cambridge English exam score of 176.

First-year admission:

1. minimum 1210 SAT combined evidence-based reading and writing plus math score or minimum 24 ACT combined score, or a minimum high school cumulative GPA of 3.00 in ASU competency courses, or class ranking in top 25% of high school class, and
2. no high school math or science competency deficiencies

Transfer admission requirements:

Transfer students with fewer than 24 transferable college credit hours:

1. minimum transfer GPA of 3.00 for fewer than 24 transfer hours, and
2. no high school math or science competency deficiencies, and
3. minimum 1210 SAT combined evidence-based reading and writing plus math score (or 1140 if taken prior to March 5, 2016) or minimum 24 ACT combined score, or a minimum high school cumulative GPA of 3.00 in ASU competency courses, or class ranking in top 25% of high school class

Transfer students with 24 or more transferable college credit hours must meet either the primary or the secondary criteria (not both):

Primary criteria

1. minimum transfer GPA of 3.00 for 24 or more transfer hours, and
2. no high school math or science competency deficiencies (if ASU Admission Services requires submission of a high school transcript)

Secondary criteria

1. minimum transfer GPA of 2.75 for 24 or more transfer credit hours, and
2. minimum GPA of 2.75 in all critical courses: MAE 201 Mechanics of Particles and Rigid Bodies I: Statics, MAE 202 Mechanics of Particles and Rigid Bodies II: Dynamics, MAE 213 Mechanics of Materials, and MAE 242 Introduction to Fluid Mechanics

Tuition information

When it comes to paying for higher education, everyone's situation is different. Students can learn about ASU tuition and financial aid options to find out which will work best for them.

Change of Major requirements

Admission requirements for many majors in the Ira A. Fulton Schools of Engineering are higher than university admission standards.

Students should visit the Change of Major form for information about how to change a major to this program.

Transfer options

ASU is committed to helping students thrive by offering tools that allow personalization of the transfer path to ASU. Students may use MyPath2ASU® to outline a list of recommended courses to take prior to transfer.

ASU has transfer partnerships in Arizona and across the country to create a simplified transfer experience for students. These pathway programs include exclusive benefits, tools and resources, and they help students save time and money in their college journey.

Program learning outcomes

Program learning outcomes identify what a student will learn or be able to do upon completion of their program. This program has the following program outcomes:

- Apply principles of mathematics and science to solve complex engineering problems (ABET Outcome)
- Apply engineering design to a student project with consideration of public welfare/other factors (ABET Outcome)
- Develop and conduct engineering experiments, and analyze and interpret data (ABET Outcome).

Global opportunities

Global experience

With more than 300 Global Education program opportunities available to them, aerospace engineering students are able to tailor their experience to their specific interests and skill sets. Whether in a foreign country, in the U.S. or online, students build communication skills, learn to adapt and persevere, and are exposed to research and internships across the world, increasing their professional network.

The Ira A. Fulton Schools of Engineering recommends these programs for students majoring in aerospace engineering.

Career opportunities

The majority of students who enter the field of aerospace engineering desire to work on the design and analysis of aerospace vehicles. Most graduates are employed in the aerospace industry or in government positions related to aerospace. Specific careers in aerospace engineering include:

- aeronautical and space systems integration
- configuration development
- material and structural design
- propulsion engineering
- space mission design and analysis
- vehicle and component analysis using computer-aided tools
- vehicle design and performance
- wind tunnel and flight testing

The aerospace engineering program has the following educational objectives:

Through volunteering, entrepreneurial endeavors, community service and their employment, graduates of the aerospace engineering program demonstrate commitment to the Sun Devil ideals of global engagement, social embeddedness, social transformation and sustainability.

Graduates of the aerospace engineering program should attain one or more of the following objectives within a few years of degree completion:

- employment in aerospace or other field in a position that capitalizes on the skills and abilities gained through the degree program in aerospace engineering, leading to positions of increasing responsibility and leadership within their organization
- admission to a graduate degree program in aerospace engineering or another technical field
- admission to a professional degree program, such as law or business, in accordance with the graduate's specific interests and abilities

Example job titles and salaries listed below are not necessarily entry level, and students should take into consideration how years of experience and geographical location may affect pay scales. Some jobs also may require advanced degrees, certifications or state-specific licensure.

Career	*Growth	*Median salary
Aerospace Engineer	6.1%	$126,880
Energy Engineer	3.3%	$104,600
Engineering Manager	4.1%	$159,920

* Data obtained from the Occupational Information Network (O*NET) under sponsorship of the U.S. Department of Labor/Employment and Training Administration (USDOL/ETA).

Bright Outlook

Professional licensure

ASU programs that may lead to professional licensure or certification are intended to prepare students for potential licensure or certification in Arizona. Completion of an ASU program may not meet educational requirements for licensure or certification in another state. For more information, students should visit the ASU professional licensure webpage.

Contact information

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