Aerospace Engineering (Aeronautics), BSE

ESAEROBSE

Program Description

The aerospace engineering curriculum provides students with an education in technological areas critical to the design and development of aerospace vehicles and systems. The aeronautics concentration under the BSE program in aerospace engineering emphasizes engineering and the design of aircraft, helicopters, missiles and other vehicles that fly through the atmosphere.

Topics in required courses cover aerodynamics, aerospace materials, aircraft structures, flight mechanics, propulsion, and stability and control. Required astronautics topics include altitude control and orbital mechanics.


At a Glance

- **College/School:** Ira A. Fulton Schools of Engineering
- **Location:** Tempe
- **Additional Program Fee:** Yes
- **Second Language Requirement:** No
- **First Required Math Course:** MAT 265 - Calculus for Engineers I
- **Math Intensity:** Substantial

Required Courses (Major Map)

2022 - 2023 Major Map
Major Map (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 and master's degree with:

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

Acceptance to the graduate program requires a separate application. During their junior year, eligible students are advised by their academic departments 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 are higher than minimum university admission standards. International students may have an additional English language proficiency criterion. Foreign nationals must meet the same admission requirements shown below with the possible additional requirement of a minimum TOEFL score. If the university requires a TOEFL score from the applicant (https://admission.asu.edu/international/undergrad-student), then admission to engineering requires a minimum TOEFL score of 550 (paper-based), 213 (computer-based), 79 on iBT (internet-based) or a minimum IELTS score of 6.5.

Freshman Admission:

1. minimum 1210 SAT combined evidence-based reading and writing plus math score or minimum 24 ACT combined score or 3.00 minimum ABOR GPA 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 less than 24 transfer hours, \textbf{and}
2. no high school math or science competency deficiencies, \textbf{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, \textbf{or} 3.00 minimum ABOR GPA, \textbf{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, \textbf{and}
2. no high school math or science competency deficiencies (if 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, \textbf{and}
2. minimum GPA of 2.75 in all critical courses: MAE 201, MAE 202, MAE 213 and MAE 242

**Change of Major Requirements**

Admission requirements for many majors in the Ira A. Fulton Schools of Engineering are higher than university admission standards. Students can find more information on the Engineering website at [https://engineering.asu.edu/admission-requirements](https://engineering.asu.edu/admission-requirements).

Students should refer to [https://changemajor.apps.asu.edu](https://changemajor.apps.asu.edu) 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\textsuperscript{TM} 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. Students may learn more about these programs by visiting the admission site: [https://admission.asu.edu/transfer/MyPath2ASU](https://admission.asu.edu/transfer/MyPath2ASU).

**Global Opportunities**
Global Experience
With over 250 programs in more than 65 countries (programs vary in length, from one week to one year), study abroad is possible for all ASU students. Study abroad programs offer global skills and knowledge to prepare students to lead in a 21st century career. Students earn ASU credit for completed courses, while staying on track for graduation, and they may apply financial aid and scholarships toward program costs. https://goglobal.asu.edu/

Career Opportunities
The majority of students entering 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, employment, etc., graduates of the aerospace engineering program will demonstrate commitment to the Sun Devil ideals of global engagement, social embeddedness, social transformation and sustainability.

Graduates of the aerospace engineering program should have attained one or more of the following objectives within a few years after completing their degrees:

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

Graduates of the aerospace engineering 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 range 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

Career examples include but are not limited to those shown in the following list. Advanced degrees or certifications may be required for academic or clinical positions.

<table>
<thead>
<tr>
<th>Career</th>
<th>*Growth</th>
<th>*Median Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerospace Engineer</td>
<td>2.8%</td>
<td>$118,610</td>
</tr>
<tr>
<td>Energy Engineer</td>
<td>1.3%</td>
<td>$103,380</td>
</tr>
<tr>
<td>Engineering Manager</td>
<td>2.6%</td>
<td>$149,530</td>
</tr>
</tbody>
</table>

* 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 Green Occupation

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. https://admission.asu.edu/academics/licensure

Students should note that not all programs within the Fulton Schools of Engineering lead to professional licensure.

Contact Information

Mechanical and Aerospace Engineering Program | ECG 202
semte@asu.edu | 480-965-2335