Biomedical Engineering, BSE

Program Description

Biomedical engineering applies principles of engineering to the study and resolution of problems in biology and medicine.

Graduates are trained to apply their skills in an ethical, sustainable and environmentally responsible manner to make contributions that address societal and individual needs.

The program objective is to prepare high-quality graduates with a broad-based education in biomedical engineering for productive employment, graduate study or professional programs, especially in human and animal medicine, biotechnology and related biology-based engineering fields; for continued development of technical knowledge, awareness and leadership abilities so graduates may address domestic or global issues in human health; and for preparation to ethically and responsibly contribute to society by drawing from an integrated, transdisciplinary biomedical engineering education that focuses on sustainability and environmentalism.


At a Glance

• College/School: Ira A. Fulton Schools of Engineering
• Location: Tempe campus
• 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)
Accelerated Degree 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:

**Biomedical Engineering, MS**

Acceptance to the graduate program requires a separate application. During their junior year, eligible students will be advised by their academic departments to apply.

Admission Requirements

**General University Admission Requirements:**

All students are required to meet general university admission requirements.

**Freshman | 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 (see [https://admission.asu.edu/international/undergrad-apply](https://admission.asu.edu/international/undergrad-apply)), then admission to engineering requires a minimum TOEFL score of 550 (paper-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 percent 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, **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 3.00 minimum ABOR GPA, or class ranking in top 25 percent 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 Admission Services requires submission of a high school transcript)

Secondary Criteria

1. minimum transfer GPA of 2.75 for 24 or more transfer hours, and
2. minimum GPA of 3.00 in all critical courses for Terms 1 and 2 (see major map for critical courses)

Change of Major Requirements

Admission requirements for many majors in the Ira A. Fulton Schools of Engineering are higher than university admission standards: https://engineering.asu.edu/admission-requirements.

Students should refer to https://changingmajors.asu.edu/request 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 the Transfer Map search 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 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/pathway-programs.
Global Opportunities

Global Experience

With over 250 programs in more than 65 countries (ranging from one week to one year), study abroad is possible for all ASU students wishing to gain global skills and knowledge in preparation for a 21st-century career. Students earn ASU credit for completed courses, while staying on track for graduation, and may apply financial aid and scholarships toward program costs. https://mystudyabroad.asu.edu/

Career Opportunities

Biomedical engineers are primarily employed in:

- governmental regulatory agencies
- hospital and research facilities
- medical and educational institutions
- medical device, biotechnology and pharmaceutical industries

In industry, they may work in all aspects of product development including:

- business development
- manufacturing
- marketing
- quality
- regulatory
- research and design
- sales

Because of their background in both the engineering and medical fields, they often serve a coordinating or interfacing function and provide a key role for transdisciplinary teams. Government positions may involve evaluating new technologies, testing product quality and safety, and setting standards.

In the hospital, biomedical engineers serving in a clinical engineering function may provide advice on the selection and use of medical equipment and supervise performance testing and maintenance. Biomedical engineers may also build customized devices for special health care, rehabilitation or research needs.
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>Biomedical Engineer</td>
<td>7.2%</td>
<td>$88,040</td>
</tr>
<tr>
<td>Human Factors Engineer</td>
<td>9.7%</td>
<td>$85,880</td>
</tr>
<tr>
<td>Microsystem Engineer</td>
<td>6.4%</td>
<td>$97,250</td>
</tr>
<tr>
<td>Technical Sales Engineer</td>
<td>6.9%</td>
<td>$98,720</td>
</tr>
<tr>
<td>Validation Engineer</td>
<td>6.4%</td>
<td>$97,250</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

Contact Information

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