Mechanical Engineering (Energy and Environment), BSE

ESMAEEBSE

Program Description

The concentration in energy and environment within the BSE in mechanical engineering is designed to prepare students to analyze technical problems in:

- air pollution
- climate change
- energy efficiency
- environmental sustainability
- renewable energy
- timely issues facing the global community

Although the primary focus of this program is technical, the general education courses in the areas of the humanities and social and behavioral sciences introduce students to the global, political and societal issues relating to energy and the environment. By focusing on issues such as air pollution, water scarcity and the lack of alternative transportation, this program becomes even more attractive for employers in the greater Phoenix area as well as nationwide.


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)

2019 - 2020 Major Map
Major Map (Archives)

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
- Materials Science and Engineering, MS
- Mechanical Engineering, MS
- Solar Energy Engineering and Commercialization, PSM

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), 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 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 credit hours, **and**
2. minimum GPA of 2.75 in all critical courses: MAE 201, MAE 202, MAE 213 and MAE 241.

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](https://engineering.asu.edu/admission-requirements).

Students should refer to [https://changingmajors.asu.edu/request](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](https://engineering.asu.edu/admission-requirements) to outline a list of recommended courses to take prior to
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

Mechanical engineers are employed in virtually every kind of industry. They are involved in generating creative design and development, seeking new knowledge through research, and the production, control, management and sales of the devices and systems needed by society.

Therefore, a major strength of a mechanical engineering education is the flexibility it provides in future employment opportunities for its graduates. Students completing this concentration have opportunities as environmental consultants; heating, ventilation and air-conditioning engineers; and power plant designers.

The mechanical engineering program has the following program educational objectives:

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

2. Graduates of the mechanical engineering program should have attained one or more of the following objectives within a few years after completing their degrees:
   1. employment in engineering or other fields in a position that capitalizes on the skills and abilities gained through the degree program in mechanical engineering (holding positions of increasing responsibility and leadership within their organizations)
   2. admission into a graduate degree program in mechanical engineering or other technical field.
   3. admission into a professional degree program, such as law, business or medicine, in accordance with the specific interests and abilities of the graduate
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>Automotive Engineer 🍃</td>
<td>8.8%</td>
<td>$85,880</td>
</tr>
<tr>
<td>Biomedical Engineer</td>
<td>7.2%</td>
<td>$88,040</td>
</tr>
<tr>
<td>Energy Engineer 🍃</td>
<td>6.4%</td>
<td>$97,250</td>
</tr>
<tr>
<td>Engineering Manager 🍃</td>
<td>5.5%</td>
<td>$137,720</td>
</tr>
<tr>
<td>Environmental Engineer 🍃</td>
<td>8.3%</td>
<td>$86,800</td>
</tr>
<tr>
<td>Mechanical Engineer 🍃</td>
<td>8.8%</td>
<td>$85,880</td>
</tr>
<tr>
<td>Power Plant Manager 🍃</td>
<td></td>
<td>$100,580</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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