Mechanical Engineering, BSE

Program Description

Mechanical engineering is a creative, diverse discipline. Mechanical engineers design, build and control the devices, machines, processes and systems that are the mainstay of modern industrialized society.

Students prepare for a career in mechanical engineering through a curriculum that includes the study of the principles governing energy transfer, mechanical design, sensors and control devices, and the application of these principles to the creative solution of practical modern problems.


At a Glance

• College/School: Ira A. Fulton Schools of Engineering
• Location: Tempe campus or Online, ASU Local
• 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 (On-campus)
2022 - 2023 Major Map (Online)
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
- Materials Science and Engineering, MS
- Mechanical Engineering, MS
- Modern Energy Production and Sustainable Use, MS
- Robotics and Autonomous Systems (Mechanical and Aerospace Engineering), MS
- Solar Energy Engineering and Commercialization, PSM

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.

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, (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 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.

Students should refer to https://changemajor.apps.asu.edu for information about how to change a major to this program.

Attend Online

ASU Online

ASU offers this program in an online format with multiple enrollment sessions throughout the year. Applicants may view the program description and request more information here.

ASU Local
It is now possible to earn an ASU degree with ASU Local, an integrated college experience in which students take advantage of in-person success coaching and programming experiences on site while completing one of 130+ undergraduate online degree programs, all of which come with online faculty interaction and tutoring support. Those interested may learn more about ASU Local [here](https://admission.asu.edu/).

**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™](https://admission.asu.edu/transfer/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. 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**

Students gain valuable, resume-enhancing experience when studying abroad. With over 250 programs available, study abroad allows students to tailor their experience to their unique interests and skill sets. Students in mechanical engineering are able to gain hands-on experience in a variety of countries around the world. In a competitive field, students stand out with the heightened cultural competency and leadership and critical thinking skills they acquired when studying abroad. [https://goglobal.asu.edu/](https://goglobal.asu.edu/)

**Career Opportunities**

Mechanical engineers are employed in virtually every kind of industry. They are involved in seeking new knowledge through research; generating creative design and development; 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.

The BSE program in mechanical engineering has the following program educational objectives:

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

Graduates of the mechanical engineering program should have attained one or more of the following objectives within a few years after completing their degrees:
• 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)
• admission into a graduate degree program in mechanical engineering or other technical field
• admission into a professional degree program, such as law, business or medicine, in accordance
with the specific interests and abilities of the graduate

Graduates of the mechanical 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>Automotive Engineer</td>
<td>3.9%</td>
<td>$90,160</td>
</tr>
<tr>
<td>Biomedical Engineer</td>
<td>4.7%</td>
<td>$92,620</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>
<tr>
<td>Mechanical Engineer</td>
<td>3.9%</td>
<td>$90,160</td>
</tr>
<tr>
<td>Supply Chain Engineer</td>
<td>10.1%</td>
<td>$88,950</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**

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