Chemical Engineering, BSE

Program Description

Chemical engineering deals with the application of chemistry, physics and mathematics to the process of converting raw materials or chemicals into more useful or valuable forms. Chemical engineering also involves the design of valuable new materials and chemical products.

The BSE program offered in chemical engineering builds on a broad base of knowledge within the basic and mathematical sciences and engineering, and it offers excellent career opportunities. Chemical engineers are engaged in the development and production of a diverse range of products, including high-performance materials needed for aerospace, automotive, biomedical, electronic and environmental applications. The modern discipline of chemical engineering is intertwined with biology and biomedical engineering.


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:

- Chemical Engineering, MS
- Materials Science and 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.

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), 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
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 credit 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 for Terms 1 and 2 (students should refer to the 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](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 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](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

Chemical engineers have traditionally played a key role in industries as varied as:

- artificial fibers
- ceramics
- food
- glass
- petrochemicals
- petroleum
- plastics
- primary metals
- specialty chemicals

There are also many newer fields with great demand for chemical engineering graduates, such as semiconductors, biotechnology, biomedical engineering, modern materials (composites, superconductors) and the solution of environmental problems.

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>Biochemical Engineer</td>
<td>6.4%</td>
<td>$97,250</td>
</tr>
<tr>
<td>Biofuel Development Manager</td>
<td>5.5%</td>
<td>$137,720</td>
</tr>
<tr>
<td>Chemical Engineer</td>
<td>7.5%</td>
<td>$102,160</td>
</tr>
<tr>
<td>Chemist</td>
<td>6.5%</td>
<td>$74,740</td>
</tr>
<tr>
<td>Occupation</td>
<td>Growth Rate</td>
<td>Salary</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-------------</td>
<td>------------</td>
</tr>
<tr>
<td>Fuel Cell Engineer</td>
<td>8.8%</td>
<td>$85,880</td>
</tr>
<tr>
<td>Nuclear Engineer</td>
<td>3.8%</td>
<td>$105,810</td>
</tr>
<tr>
<td>Petroleum Engineer</td>
<td>15.2%</td>
<td>$132,280</td>
</tr>
<tr>
<td>Pharmacist</td>
<td>5.6%</td>
<td>$124,170</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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