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 modern discipline of chemical engineering is intertwined with biology and biomedical engineering.

The BSE program offered in chemical engineering builds on a broad base of knowledge within the basic and mathematical sciences and engineering.

Accredited by the Engineering Accreditation Commission of ABET, [https://www.abet.org/](https://www.abet.org/).

**At a Glance**

- **College/School:** [Ira A. Fulton Schools of Engineering](https://www.asu.edu)
- **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](https://www.asu.edu)
- [Major Map (Archives)](https://www.asu.edu)
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:

- Chemical Engineering, MS
- Materials Science and 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. See First-year, Transfer, International, Readmission for specific 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 (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, 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% 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. 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™](https://engineering.asu.edu/admission-requirements) 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
In study abroad programs in countries such as Australia, New Zealand and the Netherlands, students learn intercultural applications of design and technology skills through hands-on learning and cultural engagement opportunities in an international setting. Students earn ASU credit for completed courses, while staying on track for graduation, and may apply financial aid and scholarships toward program costs. https://goglobal.asu.edu/

Career Opportunities
Graduates are prepared for 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. They have traditionally played a key role in industries as varied as:

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

There are also many newer fields with great demand for chemical engineering graduates, such as biomedical engineering, modern materials science (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>Biofuel Development Manager</td>
<td>2.6%</td>
<td>$149,530</td>
</tr>
<tr>
<td>Biomedical Engineer</td>
<td>4.7%</td>
<td>$92,620</td>
</tr>
<tr>
<td>Chemical Engineer</td>
<td>4.4%</td>
<td>$108,540</td>
</tr>
<tr>
<td>Chemist</td>
<td>4.7%</td>
<td>$79,300</td>
</tr>
<tr>
<td>Fuel Cell Engineer</td>
<td>3.9%</td>
<td>$90,160</td>
</tr>
<tr>
<td>Nuclear Engineer</td>
<td></td>
<td>$116,140</td>
</tr>
<tr>
<td>Occupation</td>
<td>Growth Rate</td>
<td>Average Salary</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Petroleum Engineer</td>
<td>3.2%</td>
<td>$137,330</td>
</tr>
<tr>
<td>Pharmacist</td>
<td></td>
<td>$128,710</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](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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