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
- **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)

2023 - 2024 Major Map
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 plus master's degree with:

Chemical Engineering, MS
Materials Science and Engineering, MS

Acceptance to the graduate program requires a separate application. Students typically receive approval to pursue the accelerated master's during the junior year of their bachelor's degree program. Interested students can learn about eligibility requirements and how to apply.

Admission Requirements

General University Admission Requirements:
All students are required to meet general university admission requirements.
First-year | Transfer | International | Readmission

Additional Requirements:

The admission standards for majors in the Ira A. Fulton Schools of Engineering, shown below, are higher than minimum university admission standards. International students must meet the same admission standards, with the possible additional requirement of a minimum English language proficiency test score. If the university requires an English proficiency test score from the applicant, then admission to engineering requires a minimum TOEFL iBT score of 79 (internet-based test, taken in a testing center), a minimum IELTS score of 6.5, a minimum PTE score of 58, or a minimum Duolingo English score of 105.

First-year admission:

1. minimum 1210 SAT combined evidence-based reading and writing plus math score or minimum 24 ACT combined score, or a minimum high school cumulative GPA of 3.00 in ASU competency courses, 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 fewer 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 a minimum high school cumulative GPA of 3.00 in ASU competency courses, 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 ASU 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)

Tuition Information

When it comes to paying for college, everyone’s situation is different. Students can learn about ASU tuition and financial aid options to find out which will work best for them.

Change of Major Requirements

Admission requirements for many majors in the Ira A. Fulton Schools of Engineering are higher than university admission standards.

Students should visit the Change of Major form 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® 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.
Global Opportunities

Global Experience

Global Education programs provide students an important opportunity to develop valuable skills and have valuable experiences which help to grow their self-confidence, develop their communication skills, and give them an advantage that they may not have had before.

Students learn intercultural applications of design and technology skills through hands-on learning and cultural engagement opportunities in an international setting. Participation in a Global Education program exposes students to unique environments and cultures, challenges them to adapt and persevere, helps them increase their professional and educational networks, and enhances their portfolio of experience through the kinds of hands-on research and community-based opportunities they will need in order to compete and succeed in today's challenging and quickly changing STEM fields.

The Ira A. Fulton Schools of Engineering recommend these programs for students majoring in chemical engineering.

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 example titles and salaries listed below are not necessarily entry level, and students should take into consideration how years of experience, geographical location, and required advanced degrees or certifications may affect pay scales.

<table>
<thead>
<tr>
<th>Career</th>
<th>*Growth</th>
<th>*Median Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biofuel Development Manager</td>
<td>4.1%</td>
<td>$159,920</td>
</tr>
<tr>
<td>Biomedical Engineer</td>
<td>5.1%</td>
<td>$99,550</td>
</tr>
<tr>
<td>Chemical Engineer</td>
<td>8.1%</td>
<td>$106,260</td>
</tr>
<tr>
<td>Chemist</td>
<td>6.2%</td>
<td>$80,670</td>
</tr>
<tr>
<td>Fuel Cell Engineer</td>
<td>10.0%</td>
<td>$96,310</td>
</tr>
<tr>
<td>Nuclear Engineer</td>
<td>1.1%</td>
<td>$122,480</td>
</tr>
<tr>
<td>Petroleum Engineer</td>
<td>2.5%</td>
<td>$131,800</td>
</tr>
<tr>
<td>Pharmacist</td>
<td>2.6%</td>
<td>$132,750</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

**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.

Students should note that not all programs within the Fulton Schools of Engineering lead to professional licensure.

**Contact Information**

[Chemical Engineering Program](#) | ECG 202  
semte@asu.edu | 480-965-2335