Chemical Engineering, BSE

ESCHEBSE

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 Bachelor of Science in Engineering program 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/, under the General Criteria and the Chemical, Biochemical, Biomolecular Engineering Program Criteria.

STEM-OPT for international students on F-1 visas

This program may be eligible for an Optional Practical Training extension for up to 24 months. This OPT work authorization period may help international students gain skills and experience in the U.S. Those interested in an OPT extension should review ASU degrees that qualify for the STEM-OPT extension at ASU's International Students and Scholars Center website.

The OPT extension only applies to students on an F-1 visa and does not apply to students completing a degree through ASU Online.

At a glance

- **College/school:** Ira A. Fulton Schools of Engineering
- **Location:** Tempe

- **Second language requirement:** No
- **STEM-OPT extension eligible:** Yes
- **First required math course:** MAT 265 - Calculus for Engineers I
- **Math intensity:** Substantial 

Curriculum

View 2025 - 2026 curriculum

View curriculum 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, a minimum Duolingo English score of 105, or a minimum Cambridge English exam score of 176.

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 ASU courses (or equivalents) in FSE 100, CHM 113, CHM 116, MAT 265, MAT 266, PHY 121 and PHY 122

Tuition information

When it comes to paying for higher education, 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.

Program learning outcomes

Program learning outcomes identify what a student will learn or be able to do upon completion of their program. This program has the following program outcomes:

- Apply key principles in engineering and applied chemistry through chemical process design.
- Demonstrate the ability to effectively communicate in written and oral methods in student assignments including an oral project defense and lab report.
- Apply fundamental knowledge of mathematics, science, and engineering to complex chemical engineering problems.

Global opportunities

Global experience

Global Education programs give students an important opportunity to develop valuable skills and have experiences that help to grow their self-confidence and enable them to develop their communication skills, giving them an advantage.

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 need to compete and succeed in today's challenging and quickly changing STEM fields.

The Ira A. Fulton Schools of Engineering recommends 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 variety 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

Chemical engineering graduates are also in great demand in many newer fields, such as biomedical engineering and modern materials science (composites, superconductors), and those that center on solving environmental problems.

Example job titles and salaries listed below are not necessarily entry level, and students should take into consideration how years of experience and geographical location may affect pay scales. Some jobs also may require advanced degrees, certifications or state-specific licensure.

Career	*Growth	*Median salary
Biofuel Development Manager	4.1%	$159,920
Biomedical Engineer	5.1%	$99,550
Chemical Engineer	8.1%	$106,260

Chemist	6.2%	$80,670
Fuel Cell Engineer	10.0%	$96,310
Nuclear Engineer	1.1%	$122,480
Petroleum Engineer	2.5%	$131,800
Pharmacist	2.6%	$132,750

* 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 Ira A. Fulton Schools of Engineering lead to professional licensure.

Contact information

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