

# Computer Systems Engineering, BSE

ESCSEBSE

Computer systems engineers work on the interface between different pieces of hardware, and they strive to create cutting-edge systems and products.

## Program description

The BSE program in computer systems engineering focuses on the analysis, design, testing, integration and evaluation of hardware and software systems. The curriculum is grounded in many engineering disciplines, including the applications of science and technology to the design of:

- computer architecture
- cybersecurity
- digital circuits
- distributed and embedded systems
- networking
- operating systems


Students engage in the design of integrated hardware and software solutions for computing, communication and control applications, and they practice many aspects of engineering activities, such as the development of:

- computer networks
- embedded and ubiquitous systems
- high-performance computer systems
- individual digital components

Students become skilled in interfacing different pieces of hardware and software components, and systems with products to create new capabilities and improved quality and performance.

Accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the General Criteria and the Computer Engineering Program Criteria.

## At a glance

- **College/School:** [Ira A. Fulton Schools of Engineering](#)
- **Location:** [Tempe](#)
- **Second language requirement:** No
- **First required math course:** MAT 265 - Calculus for Engineers I
- **Math intensity:** Substantial 

## Required courses (Major Map)

[2024 - 2025 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:

[Computer Engineering \(Computer Systems\), MS](#)

[Computer Science \(Big Data Systems\), MCS](#)

[Computer Science \(Big Data Systems\), MS](#)

[Computer Science \(Biomedical Informatics\), MS](#)

[Computer Science \(Cybersecurity\), MCS](#)

[Computer Science \(Cybersecurity\), MS](#)

[Computer Science \(Media Arts and Sciences\), MS](#)

[Computer Science, MCS](#)

[Computer Science, MS](#)

[Robotics and Autonomous Systems \(Artificial Intelligence\), 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 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 hours, and

2. minimum GPA of 2.75 in all critical courses: CSE 110 Principles of Programming, CSE 205 Object-oriented Programming and Data Structures, MAT 265 Calculus for Engineers I, and MAT 266 Calculus for Engineers II

## 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.

## Global opportunities

### Global experience

Students learn to thrive in a global environment through the rich educational and interpersonal experiences inherent in study abroad. A resume enhanced by the valuable study abroad experience will impress prospective employers and help the student stand out should they decide to pursue advanced study.

With over 300 [Global Education program opportunities](#) available to them, students are able to tailor their experience to their unique interests and skill sets. Whether in a foreign country, in the U.S. or online, students build communication skills, learn to adapt and persevere, and are exposed to research and internships across the world, increasing their professional network.

## Career opportunities

Computer systems engineers are employed in industry, government, education and consulting firms, where they engage in the design, development and operation of hardware and software systems of computer and networking equipment.

Computer systems engineers often focus on engineering problems or challenges of emerging computer systems, including chips, device controllers, embedded systems and high-performance computing servers. Their jobs usually involve the research, design and development of computer hardware and software for practical applications. Their work can result in innovative, state-of-the-art products that integrate computing and communication capabilities, such as those in:

- avionics and space vehicles
- digital television and photography
- intelligent highways and control systems for vehicles
- mobile devices and smart applications
- new apparatuses for health care and for the sight-impaired or others with physical disabilities
- security and defense systems

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
<u>Computer Network Administrator</u>	2.5%	\$90,520
<u>Computer Network Analyst</u>	3.5%	\$126,900
<u>Computer Programmer</u>		\$97,800
<u>Computer Science Professor</u> ☀	5.3%	\$84,760
<u>Computer Scientist</u> ☀	22.7%	\$136,620
<u>Computer Software Quality Engineer</u> ☀	20.3%	\$99,620
<u>Computer Systems Architect</u> ☀	9.7%	\$98,740
<u>Engineering Manager</u>	4.1%	\$159,920
<u>Information Security Analyst</u> ☀	31.5%	\$112,000
<u>Software Developer</u> ☀	25.7%	\$127,260

\* 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.

## Contact information

[Computer Science and Engineering Program](#) | CTRPT 105  
[SCAI.Undergrad.Admission@asu.edu](mailto:SCAI.Undergrad.Admission@asu.edu) | 480-965-3199