

Computer Science (Software Engineering), BS

ESCSESBS

Computer science will challenge you to apply design and development principles in the construction of software systems of varying complexity and to communicate effectively with a wide range of audiences.

Program description


The software engineering concentration of the BS program in computer science is appropriate for computer science students seeking careers as software engineers. Students learn advanced processes, methodologies and tools for developing and testing large and small software applications in emerging areas such as:

- databases
- enterprise systems
- interoperable systems
- mobile computing
- service-orientated computing

They also learn cybersecurity concepts and techniques, principles of human--computer interaction, and methods for developing these applications. The curriculum prepares students to assume leadership roles in software development organizations while practicing professional standards. Additionally, students are prepared to work on emerging software technology within the context of software engineering life-cycle activities.

Accredited by the Computing Accreditation Commission of ABET, <https://www.abet.org>, under the General Criteria and the Computer Science 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 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](#)

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 CSE 110 Principles of Programming, CSE 205 Object-oriented Programming and Data Structures, MAT 265 Calculus for Engineers I, and 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

Career opportunities are plentiful for software engineers.

Graduates of the software engineering concentration possess the knowledge and skills to work across the spectrum of software development process activities, including:

- architecture
- coding
- project management
- quality assurance
- requirements engineering
- testing

Careers include:

- software analyst
- software architect
- software engineer
- software task leader
- software tester

Graduates find employment in large and small organizations that develop, deploy and manage software systems. They work on all types of projects that include large, complex engineering systems, distributed banking, financial and government software, and gaming.

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 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 Analyst</u> ☀	9.6%	\$102,240
<u>Computer Systems Architect</u> ☀	9.7%	\$98,740
<u>Corporate Web Developer</u> ☀	9.7%	\$98,740
<u>Database Administrator (DBA)</u> ☀	7.0%	\$99,890
<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

Contact information

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