Computer Science (Software Engineering), BS

ESCSESBS

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 and principles of human-computer interaction and methods for developing these applications. The curriculum prepares students to assume leadership roles in software development organizations and to practice professional standards and emerging software technology to the software engineering life-cycle activities.

Accredited by the Computing 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 campus](https://www.asu.edu) or [Online](https://www.asu.edu)
- **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**
- **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 and master's degree with:

- **Computer Science (Art, Media and Engineering), 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, MCS**
- **Computer Science, 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.

-Freshman | Transfer | International | Readmission

**Additional Requirements:**

The admission standards for majors in the Ira A. Fulton Schools of Engineering are higher than minimum university 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 (students should check 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 minimum ABOR GPA of 3.00 or class ranking in top 25 percent 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 minimum ABOR GPA of 3.00, or class ranking in top 25 percent 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 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 for Terms 1 and 2 (see 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 should review the following Engineering website for more information: https://engineering.asu.edu/admission-requirements.
Students should refer to 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™ 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.

**Global Opportunities**

**Global Experience**

Students gain valuable experience when studying abroad, experience which enhances their resumes. With over 250 programs available, study abroad allows students to tailor their experience to their unique interests and skill sets. Students in computer science are able to gain hands-on experience in programs like a summer in Colombia and a semester in Ireland. Students who study abroad acquire heightened cultural competency and leadership and critical thinking skills, enabling them to stand out in competitively in their chosen field. https://goglobal.asu.edu/

**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.

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>Computer Programmer</td>
<td></td>
<td>$89,190</td>
</tr>
<tr>
<td>Computer Science Professor</td>
<td>2.6%</td>
<td>$85,540</td>
</tr>
<tr>
<td>Computer Scientist</td>
<td>15.4%</td>
<td>$126,830</td>
</tr>
<tr>
<td>Computer Software Quality Engineer</td>
<td></td>
<td>not available</td>
</tr>
<tr>
<td>Computer Systems Analyst</td>
<td>7.4%</td>
<td>$93,730</td>
</tr>
<tr>
<td>Computer Systems Architect</td>
<td>5.7%</td>
<td>$92,870</td>
</tr>
<tr>
<td>Corporate Web Developer</td>
<td>5.7%</td>
<td>$92,870</td>
</tr>
<tr>
<td>Database Administrator (DBA)</td>
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<td>not available</td>
</tr>
<tr>
<td>Information Security Analyst</td>
<td>31.2%</td>
<td>$103,590</td>
</tr>
<tr>
<td>Software Developer</td>
<td></td>
<td>not available</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

Contact Information

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