Computer Systems Engineering, BSE

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
• computer security
• 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. 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 at interfacing different pieces of hardware and software components and integrating systems and products with new capabilities and improved quality and performance.


At a Glance

• College/School: [Ira A. Fulton Schools of Engineering](http://www.asu.edu)
• Location: [Tempe campus](http://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)

2019 - 2020 Major Map
Major Map (Archives)

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 Engineering (Computer Systems), MS
- 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
- Robotics and Autonomous Systems (Artificial Intelligence), MS

Acceptance to the graduate program requires a separate application. During their junior year, eligible students will be 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, (see https://admission.asu.edu/international/undergrad-apply) 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 3.00 minimum ABOR GPA 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 3.00 minimum ABOR GPA, 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: https://engineering.asu.edu/admission-requirements/.
Students should refer to https://changingmajors.asu.edu/request 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 the Transfer Map search 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 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/pathway-programs.

Global Opportunities

Global Experience

With over 250 programs in more than 65 countries, ranging from one week to one year, study abroad is possible for all ASU students wishing to gain global skills and knowledge in preparation for a 21st-century career. Students earn ASU credit for completed courses, while staying on track for graduation, and may apply financial aid and scholarships toward program costs. https://mystudyabroad.asu.edu/

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 find themselves focusing on engineering problems or challenges of emerging computer systems, from chips to 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

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 Network Administrator</td>
<td>6.1%</td>
<td>$81,100</td>
</tr>
<tr>
<td>Computer Network Analyst</td>
<td>6.5%</td>
<td>$104,650</td>
</tr>
<tr>
<td>Computer Programmer</td>
<td>6%</td>
<td>$82,240</td>
</tr>
<tr>
<td>Computer Science Professor</td>
<td>8.1%</td>
<td>$78,630</td>
</tr>
<tr>
<td>Computer Scientist</td>
<td>19.2%</td>
<td>$114,520</td>
</tr>
<tr>
<td>Computer Software Quality Engineer</td>
<td>9.3%</td>
<td>$88,510</td>
</tr>
<tr>
<td>Computer System Architect</td>
<td>9.3%</td>
<td>$88,510</td>
</tr>
<tr>
<td>Engineering Manager</td>
<td>5.5%</td>
<td>$137,720</td>
</tr>
<tr>
<td>Information Security Analyst</td>
<td>28.5%</td>
<td>$95,510</td>
</tr>
<tr>
<td>Software Engineer</td>
<td>30.7%</td>
<td>$101,790</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

Computer Science and Engineering Program | CTRPT 105
cidse.undergrad@asu.edu | 480-965-3199