Computer Systems Engineering, BSE

ESCSEBSE

Program Description

The computer systems engineering program 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
- **Location:** Tempe campus
- **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)

2018 - 2019 Major Map
Major Map (Archives)

### Accelerated Degrees

This degree is also offered in an **accelerated format** 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 (Information Assurance), MCS
- Computer Science (Information Assurance), MS
- Computer Science, MCS
- Computer Science, MS

Acceptance to the graduate program requires a separate application. During their junior and senior years, 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.

Available options:
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 http://global.asu.edu/future/undergrad) 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 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, 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

Current ASU students should refer to https://engineering.asu.edu/admission-requirements/ for the major change requirements for this program.
Transfer Agreements

ASU has partnered with colleges and universities in Arizona, California, Illinois and Washington to provide transfer curriculum pathways. Select where you are transferring from to see if there is a partnership agreement between your institution and ASU for this degree program. If you do not see your state or institution listed, please check back as we are always working on creating new partnerships.

Transfer from a Maricopa Community College in Arizona

Select a college

- Chandler-Gilbert Community College
- Estrella Mountain Community College
- GateWay Community College
- Glendale Community College
- Mesa Community College
- Paradise Valley Community College
- Phoenix College
- Rio Salado College
- Scottsdale Community College
- South Mountain Community College

Transfer from an Arizona Community College

Select a college

- Arizona Western College
- Central Arizona College
- Cochise College
- Coconino Community College
- Dine College
- Eastern Arizona College
- Gila Community College
- Mohave Community College
- Northland Pioneer College
- Pima Community College
- Tohono O'odham Community College
- Yavapai College

Transfer from another state

Select a state

- California
- Illinois
- Washington
- Another state

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 Hardware Engineer</td>
<td>3.1%</td>
<td>$108,430</td>
</tr>
<tr>
<td>Computer Network Administrator</td>
<td>7.9%</td>
<td>$75,790</td>
</tr>
<tr>
<td>Computer Network Analyst</td>
<td>8.7%</td>
<td>$98,430</td>
</tr>
<tr>
<td>Computer Network Technician</td>
<td>7.5%</td>
<td>$61,830</td>
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<tr>
<td>Computer Programmer</td>
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<td>$77,550</td>
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<tr>
<td>Computer Science Professor</td>
<td>8.7%</td>
<td>$72,010</td>
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<tr>
<td>Computer Scientist</td>
<td>10.7%</td>
<td>$108,360</td>
</tr>
<tr>
<td>Computer Software Quality Engineer</td>
<td>3.3%</td>
<td>$83,410</td>
</tr>
<tr>
<td>Computer System Architect</td>
<td>3.3%</td>
<td>$83,410</td>
</tr>
<tr>
<td>Computer Systems Analyst</td>
<td>20.9%</td>
<td>$82,710</td>
</tr>
<tr>
<td>Corporate Web Developer</td>
<td>3.3%</td>
<td>$83,410</td>
</tr>
<tr>
<td>Database Administrator (DBA)</td>
<td>11.1%</td>
<td>$80,280</td>
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<tr>
<td>Document Management Specialist</td>
<td>3.3%</td>
<td>$83,410</td>
</tr>
<tr>
<td>Engineering Manager</td>
<td>2.0%</td>
<td>$130,620</td>
</tr>
<tr>
<td>Geospatial Information Technologists</td>
<td>3.3%</td>
<td>$83,410</td>
</tr>
<tr>
<td>Job Title</td>
<td>Growth Rate</td>
<td>Salary</td>
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<td>----------------------------------------------------</td>
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<tr>
<td>Information Security Analyst</td>
<td>17.9%</td>
<td>$88,890</td>
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<tr>
<td>Information Technology Manager (IT Manager)</td>
<td>15.4%</td>
<td>$127,640</td>
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<tr>
<td>Nursing Operations Manager</td>
<td>20.9%</td>
<td>$82,710</td>
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<tr>
<td>Software Developer</td>
<td>13.0%</td>
<td>$102,880</td>
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<tr>
<td>Software Engineer</td>
<td>18.8%</td>
<td>$95,510</td>
</tr>
<tr>
<td>Telecommunications Engineering Specialist</td>
<td>8.7%</td>
<td>$98,430</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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