Software Engineering, BS

TSSERBS

Program Description

The BS program in software engineering blends engineering, computing, project leadership and software construction.

Students learn how to make creative software solutions to today's problems. Software systems are complex, often including millions of lines of code. Graduates of the bachelor's degree program in software engineering possess the knowledge and skills of a defined engineering approach to complex systems analysis, planning, design and construction.

The program has a unique, project-driven curriculum, establishing a new model for software engineering education. The program is built around the concepts of engaged learning, discovery-based education and learn-by-doing. Students learn by solving engaging projects, commonly as a member of a development team. Students complete projects in every semester of the program that provide emphasis in communication, teamwork, critical thinking and professionalism. Students have flexibility in designing their course of study; they select technical electives from a pool of courses in different software engineering application areas such as web and mobile applications, embedded systems and other interdisciplinary areas.


This major is eligible for the Western Undergraduate Exchange program at the following location: Polytechnic campus. Students from Western states who select this major and campus may be eligible for reduced nonresident tuition at a rate of 150% of Arizona resident tuition plus all applicable fees. Students should click the link for more information and eligibility requirements of the WUE program.

At a Glance

- College/School: Ira A. Fulton Schools of Engineering
• **Location:** Polytechnic VUE or Online, ASU Local

• **Additional Program Fee:** Yes
• **Second Language Requirement:** No
• **First Required Math Course:** MAT 265 - Calculus for Engineers I
• **Math Intensity:** Substantial

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**Required Courses (Major Map)**

- 2022 - 2023 Major Map (On-campus)
- 2022 - 2023 Major Map (Online)
- Major Map (Archives)

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**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.

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**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 (Big Data Systems), MCS
- Computer Science (Cybersecurity), MCS
- Computer Science, MCS
- Robotics and Autonomous Systems (Artificial Intelligence), MS
- Software Engineering, MS

Acceptance to the graduate program requires a separate application. During their junior year, eligible students are advised by their academic departments to apply.

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**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 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 (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 3.00 minimum ABOR GPA or class ranking in top 25% of high school class, and
2. Admission may be granted with one deficiency in no more than two competency areas: https://admission.asu.edu/first-year/competency-requirements. Deficiencies in both math and laboratory science are not acceptable.

**Transfer Admission Requirements:**

**Transfer students with fewer than 24 transferable college credit hours:**

1. minimum transfer GPA of 2.75 for less than 24 transfer hours, and
2. satisfy the freshmen admission requirements

**Transfer students with more than 24 transferable college credit hours:**

1. minimum transfer GPA of 2.75 for 24 or more transfer hours, and
2. If Admission Services requires submission of a high school transcript, admission may be granted with one deficiency in no more than two competency areas: https://admission.asu.edu/first-year/competency-requirements. Deficiencies in both math and laboratory science are not acceptable.

**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.

**Attend Online**
ASU Online

ASU offers this program in an online format with multiple enrollment sessions throughout the year. Applicants may view the program description and request more information here.

ASU Local

It is now possible to earn an ASU degree with ASU Local, an integrated college experience in which students take advantage of in-person success coaching and programming experiences on site while completing one of 130+ undergraduate online degree programs, all of which come with online faculty interaction and tutoring support. Those interested may learn more about ASU Local here.

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 in software engineering gain valuable hands-on experience when studying abroad, experience which enhances their resumes. With over 250 programs available in a variety of countries around the world, study abroad allows students to tailor their experience to their unique interests and skill sets. In a competitive field, students stand out with the heightened cultural competency and the leadership and critical thinking skills they achieved when studying abroad. More information on available programs can be found on the Global Education website. https://goglobal.asu.edu/

Career Opportunities

Software engineers solve a broad set of transdisciplinary problems and apply new technologies to improve the quality of life.

Graduates are prepared for advanced study in computing or an allied field or to enter the computing profession, most commonly as application software engineers. They design and engineer innovative systems that may include mechanical and electrical components that interact with software.
According to the Bureau of Labor Statistics, software engineers are highly paid, and there is significant growth in the number of employment opportunities. Some software engineering jobs may include:

- creating applications for mobile devices
- creating web applications
- designing, creating and validating software for avionics, robotics and similar systems fields

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 Software Quality Engineer</td>
<td></td>
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</tr>
<tr>
<td>Information Technology Manager (IT Manager)</td>
<td>10.4%</td>
<td>$151,150</td>
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<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**

Software Engineering | PICHO 245
SCAI.Undergrad.Admission@asu.edu | 480-965-3199