

Engineering (Electrical Systems), BSE

TSEGRESBSE

Engineers are creative problem-solvers who help shape the future. Few professions unleash the spirit of innovation like engineering.

Program description

The BSE program in engineering prepares graduates to collaborate across disciplines to design and build solutions to real-world problems.


Bachelor of Science in Engineering students apply fundamental engineering knowledge and design thinking to real projects every semester. Students in the electrical systems concentration of the program build a broad engineering foundation to which they add the skills and knowledge they will need to contribute electrical subject matter expertise on transdisciplinary engineering teams. This expertise includes theory and application of sensors, actuators, microcontrollers and microprocessors, as well as the integration of these components into electrical and mechatronic systems. The electrical systems curriculum also provides significant hands-on experience designing and implementing electrical and mechatronic systems to meet the needs of users.

The program enables students to develop sophisticated technical skills in tandem with the professional skills of communication, teamwork, collaboration, self-motivation and adaptability, and the program's emphasis on open-ended design and project-based learning supports the development of entrepreneurial skills and attitudes.

Accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>, under the General Criteria and the Engineering, General Engineering, Engineering Physics, and Engineering Science Program Criteria.

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](#) **WUE**
- **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:

[Clean Energy Systems, MS](#)

[Engineering, MS](#)

[Global Management, MGM](#)

[Manufacturing Engineering, MS](#)

[Robotics and Autonomous Systems \(Systems Engineering\), MS](#)

[Secondary Education \(Teacher Certification\), MEd](#)

[Technology \(Management of Technology\), MSTech](#)

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](#)

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

A current ASU student must have a minimum cumulative ASU GPA of 2.00.

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.

Program learning outcomes

Program learning outcomes identify what a student will learn or be able to do upon completion of their program. This program has the following program outcomes:

- Design engineering systems including components, and processes to meet needs within realistic constraints including social, political, economic, ethical, health and safety, manufacturing and/or sustainability.
- Communicate engineering findings to colleagues, clients, other stakeholders and the public in written, oral and graphical form.
- Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics. (ABET)

Global opportunities

Global experience

Study abroad enables students to gain valuable, resume-building experience. Participation in a [Global Education program](#) provides students with the heightened cultural competency as well as leadership and critical thinking skills that will help them stand out in a competitive industry.

Whether in a foreign country, in the U.S. or online, students build communication skills, are challenged to adapt and persevere, are exposed to research and internships across the world, and increase their professional network.



Career opportunities

Engineers on transdisciplinary teams collaborate to design, manufacture and deliver innovative technological products and services.

Engineers with electrical expertise are in high demand in many industry sectors, especially manufacturing, utilities, and communications and defense systems. Electrical systems also pervade the service sectors in areas such as health care, finance, education and entertainment.

Graduates of this program have the broad base of technical knowledge and operational skills that make them invaluable members of multidisciplinary engineering teams and well suited for employment across a broad spectrum of engineering endeavors. They are prepared to work in large corporations, government agencies and small businesses, and to go on to graduate school to pursue advanced degrees. Some graduates start companies of their own.

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>Automation Engineer</u>	3.3%	\$104,600
<u>Electrical Engineer</u>	4.2%	\$103,320
<u>Electronics Engineer</u> 	7.2%	\$108,170
<u>Energy Engineer</u>	3.3%	\$104,600
<u>Fuel Cell Engineer</u> 	10.0%	\$96,310
<u>Microsystem Engineer</u>	3.3%	\$104,600
<u>Robotics Engineer</u>	3.3%	\$104,600
<u>Solar Energy Systems Engineer</u>	3.3%	\$104,600
<u>Wind Energy Engineer</u>	3.3%	\$104,600

* Data obtained from the Occupational Information Network (O*NET) under sponsorship of the U.S. Department of Labor/Employment and Training Administration (USDOL/ETA).

Professional licensure

ASU programs that may lead to professional licensure or certification are intended to prepare students for potential licensure or certification in Arizona. Completion of an ASU program may not meet educational requirements for licensure or certification in another state. For more information, students should visit the [ASU professional licensure](#) webpage.

Students should note that not all programs within the Ira A. Fulton Schools of Engineering lead to professional licensure.

Contact information

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