

# Electrical Engineering (Electric Power and Energy Systems), BSE

ESEEEPBSE


## Program description

The electric power and energy systems concentration in the BSE program in electrical engineering prepares students for positions after graduation in industries dealing with the generation, transmission and utilization of electric power. Generation includes conventional power generation (fossil fuel and nuclear) and alternative energy systems, including solar, wind and fuel cells.

Students in this program complete the foundation courses in math, science and engineering and then are required to take the pathway course in energy systems and power electronics and complete nine of the 15 technical elective credit hours with electrical power and energy systems courses. The senior design capstone project focuses on the area of electric power and energy systems.

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

## At a glance

- **College/School:** [Ira A. Fulton Schools of Engineering](#)
- **Location:** [Tempe](#) or [Online](#), [ASU Local](#)
- **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 \(on-campus\)](#)

[2024 - 2025 Major Map \(online\)](#)

[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:

[Astrophysics and Astronomy, MS](#)

[Electrical Engineering, MS](#)

[Electrical Engineering, MSE](#)

[Exploration Systems Design \(Instrumentation\), MS](#)

[Exploration Systems Design \(Sensor Networks\), MS](#)

[Exploration Systems Design \(Systems Engineering\), MS](#)

[Exploration Systems Design, MS](#)

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

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](#)

### Additional requirements:

The admission standards for majors in the Ira A. Fulton Schools of Engineering, shown below, are higher than minimum university admission standards. International students must meet the same admission standards, with the possible additional requirement of a minimum [English language proficiency](#) test score. If the university requires an English proficiency test score from the applicant, then admission to

engineering requires a minimum TOEFL iBT score of 79 (internet-based test, taken in a testing center), a minimum IELTS score of 6.5, a minimum PTE score of 58, a minimum Duolingo English score of 105, or a minimum Cambridge English exam score of 176.

#### **First-year admission:**

1. minimum 1210 SAT combined evidence-based reading and writing plus math score or minimum 24 ACT combined score, **or** a minimum high school cumulative GPA of 3.00 in ASU competency courses, **or** class ranking in top 25% 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 fewer 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** a minimum high school cumulative GPA of 3.00 in ASU competency courses, **or** class ranking in top 25% 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 ASU Admission Services requires submission of a high school transcript)

##### **Secondary criteria**

1. minimum transfer GPA of 2.50 for 24 or more transfer hours, **and**
2. minimum GPA of 2.75 in all critical courses for Terms 1 and 2 (MAT 265 Calculus for Engineers I, MAT 266 Calculus for Engineers II, PHY 121 University Physics I: Mechanics, and PHY 122 University Physics Laboratory I)

## **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

[Admission requirements](#) for many majors in the Ira A. Fulton Schools of Engineering are higher than university admission standards.

Students should visit the [Change of Major form](#) 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's ASU Online page](#) for program descriptions and to request more information.

### 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.

## 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:

- Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

- Apply knowledge of mathematics, science, and engineering, with focus on electrical power systems.

## Global opportunities

### Global experience

Students gain valuable experience when studying abroad, experience that enhances their resumes. With over 300 programs available, [study abroad](#) enables students to tailor their experience to their unique interests and skill sets. Students in electrical engineering are able to gain hands-on experience in a variety of international locations. In a competitive field, students stand out with the heightened cultural competency as well as leadership and critical thinking skills they achieved when studying abroad. More information on available programs can be found on the Global Education website.

## Career opportunities

Career opportunities for graduates with a concentration in electric power and energy systems include:

- engineering consulting firms
- entrepreneurial startups
- power equipment manufacturers
- research and design organizations
- state, federal and municipal agencies
- utility companies

This concentration also prepares students to pursue graduate degrees in the areas of:

- power generation
- power systems
- power transmission and distribution
- renewable and sustainable energy sources

The program also prepares graduates for continued learning experiences, either in a formal graduate program or in continuing education applications.

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
<a href="#">Aerospace Engineer</a> 🌟	6.1%	\$126,880
<a href="#">Computer Hardware Engineer</a> 🌟	4.6%	\$132,360

<b><u>Electrical Engineer</u></b>	4.2%	\$103,320
<b><u>Electronics Engineer</u></b> ☀	7.2%	\$108,170
<b><u>Energy Engineer</u></b>	3.3%	\$104,600
<b><u>Nuclear Engineer</u></b>	1.1%	\$122,480
<b><u>Radio Frequency Identification Device Specialist</u></b> ☀	7.2%	\$108,170
<b><u>Solar Energy Systems Engineer</u></b>	3.3%	\$104,600
<b><u>Telecommunications Engineering Specialist</u></b>	3.5%	\$126,900
<b><u>Wind Energy Engineer</u></b>	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).

☀ **Bright Outlook**

## 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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