Electrical Engineering (Electric Power and Energy Systems), BSE

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 electric power and complete nine of the 15 technical elective credit hours with power classes. The senior design capstone project focuses on the area of electric power and energy systems.


At a Glance

- **College/School:** Ira A. Fulton Schools of Engineering
- **Location:** Tempe campus 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

Required Courses (Major Map)
Concurrent Program Options

Students pursuing concurrent degrees (also known as a âdouble majorâ) 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 and master's degree with:

- Electrical Engineering, MS
- Electrical Engineering, MSE
- Robotics and Autonomous Systems (Electrical 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.

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 (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. 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% 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 2.50 for 24 or more transfer hours, and
2. minimum GPA of 2.75 in all critical courses for Terms 1 and 2 (MAT 265, MAT 266, PHY 121 and PHY 122)

Change of Major Requirements

Admission requirements for many majors in the Ira A. Fulton Schools of Engineering are higher than university admission standards. Students can find more information on the following Engineering website: [https://engineering.asu.edu/admission-requirements](https://engineering.asu.edu/admission-requirements).

Students should refer to [https://changemajor.apps.asu.edu](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](https://changemajor.apps.asu.edu).

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.

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 250 programs available, study abroad allows 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 and 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

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

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

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.

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>Aerospace Engineer</td>
<td>2.8%</td>
<td>$118,610</td>
</tr>
<tr>
<td>Computer Hardware Engineer</td>
<td>1.6%</td>
<td>$119,560</td>
</tr>
<tr>
<td>Electrical Engineer</td>
<td>4.6%</td>
<td>$100,830</td>
</tr>
<tr>
<td>Electronics Engineer</td>
<td>1.4%</td>
<td>$107,540</td>
</tr>
<tr>
<td>Energy Engineer</td>
<td>1.3%</td>
<td>$103,380</td>
</tr>
<tr>
<td>Nuclear Engineer</td>
<td></td>
<td>$116,140</td>
</tr>
<tr>
<td>Radio Frequency Identification Device Specialist</td>
<td>1.4%</td>
<td>$107,540</td>
</tr>
<tr>
<td>Solar Energy Systems Engineer</td>
<td>1.3%</td>
<td>$103,380</td>
</tr>
<tr>
<td>Telecommunications Engineering Specialist</td>
<td>5.0%</td>
<td>$116,780</td>
</tr>
<tr>
<td>Wind Energy Engineer</td>
<td>1.3%</td>
<td>$103,380</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
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: https://admission.asu.edu/academics/licensure.

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

Contact Information

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