Arizona State University (Tempe campus)

Mechanical Engineering (Energy and Environment), BSE

Study details

Course type: Bachelor's degree
Degree: Mechanical Engineering (Energy and Environment), BSE ESMAEEBSE
Study mode: Full time
Duration: 48 Month

Cost of study

Cost : 35 430 USD
Reg. fee : 85 USD
Scolarship :
Insurance : 2 765 USD

Intake/s

Jan/May/Aug

Requirements

Academic requirements

First-year students must:

- Have a 3.00 grade point average (GPA) (a "B" or better where "A"=4.00) from a secondary school. Some ASU programs may have higher admission or English proficiency requirements and may consider a minimum ACT or SAT score.
- Must have three years of high school coursework. (If you are currently in high school, ASU needs to see 9–11 grade coursework. If you have completed high school, ASU needs to see 10–12 grade coursework.)
- Must have and present a completed high school diploma or certificate.

Conditional admission

ASU may offer conditional undergraduate admission to international applicants to an on-campus program who meet the academic (aptitude) requirements but who are not proficient in English. This offer of conditional admission will give you time to improve your English proficiency before you start classes at ASU. Your conditional admission offer is good for up to three semesters, during which time you must meet one of these requirements to begin your ASU experience.

Competency requirements

International students who completed high school outside the U.S. are required to meet the following competency requirements:

- Math: four years (algebra I, geometry, algebra II and one course requiring algebra II as a prerequisite).
- Laboratory science: three years total (one year each from any of the following areas are accepted: biology, chemistry, earth science, integrated sciences and physics).

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

Accommodation

Provided by partner agencies

Speciality
STEM-OPT for international students on F-1 visas

This program may be eligible for an Optional Practical Training extension for up to 24 months. This OPT work authorization period may help international students gain skills and experience in the U.S. Those interested in an OPT extension should review ASU degrees that qualify for the STEM-OPT extension at ASU's International Students and Scholars Center website.

The OPT extension only applies to students on an F-1 visa and does not apply to students completing a degree through ASU Online.

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 2.75 for 24 or more transfer credit hours, **and**
2. minimum GPA of 2.75 in all critical courses: MAE 201 Mechanics of Particles and Rigid Bodies I: Statics, MAE 202 Mechanics of Particles and Rigid Bodies II: Dynamics, MAE 213 Mechanics of Materials, and MAE 241 Introduction to Thermodynamics

Additional information
Program description

The concentration in energy and environment within the BSE program in mechanical engineering is designed to prepare students to analyze technical problems in:

- air pollution
- climate change
- energy efficiency
- environmental sustainability
- renewable energy
- timely issues facing the global community

Although the primary focus of this program is technical, the general education courses in the areas of the humanities and social and behavioral sciences introduce students to the global, political and societal issues relating to energy and the environment.

By focusing on issues such as air pollution, water scarcity and the lack of alternative transportation, graduates from the program are attractive to employers in the greater Phoenix area and nationwide.

Accredited by the Engineering Accreditation Commission of ABET, https://www.abet.org, under the General Criteria and the Mechanical Engineering Program Criteria.

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:

- Aerospace Engineering, MS
- Materials Science and Engineering, MS
- Mechanical Engineering, MS

- Modern Energy Production and Sustainable Use, 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.

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:

- Apply principles of mathematics and science to solve complex engineering problems.
- Apply engineering design with consideration of public welfare/other factors.
- Develop and conduct engineering experiments, and analyze and interpret data.

Global opportunities
Global experience

Students gain valuable experience when studying abroad, experience that can enhance their resumes. With over 300 programs available, study abroad allows students to tailor their experience to their unique interests and skill sets. Students focusing on energy and the environment are able to gain hands-on experience in a variety of countries around the world. In a competitive field, students stand out with the heightened cultural competency, and leadership and critical thinking skills acquired through study abroad.

Career opportunities

Mechanical engineers are employed in virtually every kind of industry. They are involved in generating creative design and development; seeking new knowledge through research; and the production, control, management and sales of the devices and systems needed by society. Therefore, a major strength of a mechanical engineering education is the flexibility it provides for its graduates in future employment opportunities. Students completing this concentration have opportunities as environmental consultants; heating, ventilation and air-conditioning engineers; and power plant designers.

The mechanical engineering program has the following program educational objectives:

Through activities such as volunteering, entrepreneurial endeavors, community service, and their employment, graduates of the mechanical engineering program demonstrate commitment to the Sun Devil ideals of global engagement, social embeddedness, social transformation and sustainability.

Graduates of the mechanical engineering program should attain one or more of the following objectives within a few years after completing their degrees:

- admission to a graduate degree program in mechanical engineering or other technical field
- admission to a professional degree program, such as law, business or medicine, in accordance with the specific interests and abilities of the graduate
- employment in engineering or other fields in a position that capitalizes on the skills and abilities gained through the degree program in mechanical engineering (holding positions of increasing responsibility and leadership within their organizations)

Graduates of the mechanical engineering program are expected to attain the following:

- an ability to acquire and apply new knowledge as needed, using appropriate learning strategies
- an ability to 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
- an ability to communicate effectively with a range of audiences
- an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks and meet objectives
- an ability to identify, formulate and solve complex engineering problems by applying principles of engineering, science and mathematics
- an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental and societal contexts