

# Industrial Engineering, BSE

ESIEEBSE


## Program description

Industrial engineering pertains to the design, improvement, installation and operation of integrated systems of people, materials, information, equipment and energy, with the purpose of determining efficient ways to make a product or provide a service. Industrial engineering draws on specialized knowledge and skills in the mathematical, physical and social sciences and the principles and methods of engineering analysis and design.

The underlying concepts for the BSE program in industrial engineering include certain business principles but emphasize the use of mathematics and information technology to build models to describe, understand and optimize system performance. Depending on the subspecialties involved and the intended application, industrial engineering may also be known as operations management, management science, operations research, systems engineering or manufacturing engineering.

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

## At a glance

- **College/School:** [Ira A. Fulton Schools of Engineering](#)
- **Location:** [Tempe](#)
- **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](#)

## 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:

[Global Management \(Creative Industries and Design Thinking\), MGM](#)

[Global Management \(Data Science\), MGM](#)

[Global Management \(Digital Audience Strategy\), MGM](#)

[Global Management \(Global Affairs\), MGM](#)

[Global Management \(Global Business\), MGM](#)

[Global Management \(Global Development and Innovation\), MGM](#)

[Global Management \(Global Digital Transformation\), MGM](#)

[Global Management \(Global Entrepreneurship\), MGM](#)

[Global Management \(Global Health Care Delivery\), MGM](#)

[Global Management \(Global Legal Studies\), MGM](#)

[Global Management \(Nonprofit Leadership and Management\), MGM](#)

[Global Management \(Public Administration\), MGM](#)

[Global Management \(Public Policy\), MGM](#)

[Global Management \(Sustainability Solutions\), MGM](#)

[Global Management \(Sustainable Tourism\), MGM](#)

[Global Management, MGM](#)

[Industrial 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 2.75 for 24 or more transfer hours, **and**
2. minimum GPA of 2.75 in CSE 110 Principles of Programming, MAT 265 Calculus for Engineers I and MAT 266 Calculus for Engineers II

## 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.

## 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:

- ABET 1: Will demonstrate the ability to identify, formulate and solve complex engineering problems by applying principles of engineering, science and mathematics
- ABET 6: Will demonstrate an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- ABET 7: Will demonstrate the ability to acquire and apply new knowledge as needed, using appropriate learning strategies

## Global opportunities

### Global experience

With more than 300 [Global Education program opportunities](#) available to them, industrial engineering students are able to tailor their experience to their unique interests and skill sets. Whether in a foreign

country, in the U.S. or online, students build communication skills, learn to adapt and persevere, and are exposed to research and internships across the world, increasing their professional network.

## Career opportunities

Graduates in industrial engineering are prepared to design and manage systems for a wide range of organizations. They find exciting career opportunities in all types of manufacturing and service industries, including:

- banking and finance
- defense and government
- health care
- hospitality, sports and entertainment
- management consulting
- manufacturing (e.g., aerospace, automotive, semiconductor)
- software
- telecommunication
- transportation and logistics

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>Distribution Center Manager</u> ☀	8.2%	\$98,560
<u>Engineering Manager</u>	4.1%	\$159,920
<u>Human Factors Engineer</u> ☀	11.7%	\$96,350
<u>Industrial Engineer</u> ☀	11.7%	\$96,350
<u>Operations Research Analyst</u> ☀	22.5%	\$85,720
<u>Quality Control Manager</u>	1.6%	\$107,560
<u>Supply Chain Engineer</u> ☀	11.7%	\$96,350
<u>Supply Chain Manager</u> ☀	8.2%	\$98,560

\* 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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