Materials Science and Engineering, BSE

ESMSEBSE

Program Description

Materials engineers are responsible for designing and developing advanced materials for a wide variety of engineering applications. Courses in materials teach students in the BSE program in materials science and engineering about the design of materials and how to process them to improve their structure, properties and performance. Materials engineers are in demand by almost every industry, from automotive to aerospace to biomaterials to nanotechnology.


At a Glance

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

2018 - 2019 Major Map
Major Map (Archives)

Accelerated Degrees

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:

Materials Science and Engineering, MS
Acceptance to the graduate program requires a separate application. During their junior year, eligible students will be 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 (see [http://global.asu.edu/future/undergrad](http://global.asu.edu/future/undergrad)), 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 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 percent 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 percent 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 2.75 for 24 or more transfer hours, and
2. minimum GPA of 2.75 in all critical courses for Terms 1 and 2 (see major map for critical courses)

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 refer to https://engineering.asu.edu/admission-requirements for information about how to change a major to this program.

Transfer Agreements

ASU has partnered with colleges and universities in Arizona, California, Illinois and Washington to provide transfer curriculum pathways. Students should select their current institution to see if there is a partnership agreement between the institution and ASU for this degree program. Students who do not see their state or institution listed should check back as ASU is always working on creating new partnerships.

Transfer from a Maricopa Community College in Arizona

Select a college
- Chandler-Gilbert Community College
- Estrella Mountain Community College

Transfer from an Arizona Community College

Select a college
- Arizona Western College
- Central Arizona College
- Cochise College

Transfer from another state

Select a state
- California
- Illinois
- Washington
- Another state
Global Opportunities

Global Experience

With over 250 programs in more than 65 countries (ranging from one week to one year), study abroad is possible for all ASU students wishing to gain global skills and knowledge in preparation for a 21st century career. Students earn ASU credit for completed courses, while staying on track for graduation, and may apply financial aid and scholarships toward program costs. [https://mystudyabroad.asu.edu/](https://mystudyabroad.asu.edu/)

Career Opportunities

Materials engineers are in demand in a wide range of industries and professions, including:

- aerospace
- automotive
- computer
- electronics
- energy
- health care
- microelectronics
- nanotechnology
- robotics
- telecommunications
The career paths in these industries offer opportunities to impact technological advances through working in a team environment with engineers from the chemical, electrical, mechanical, aerospace and other engineering disciplines.

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>6.1%</td>
<td>$113,030</td>
</tr>
<tr>
<td>Automation Engineer</td>
<td>6.4%</td>
<td>$97,250</td>
</tr>
<tr>
<td>Automotive Engineer</td>
<td>8.8%</td>
<td>$85,880</td>
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<tr>
<td>Computer Hardware Engineer</td>
<td>5.5%</td>
<td>$115,120</td>
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<tr>
<td>Designer (General)</td>
<td>5.8%</td>
<td>$55,930</td>
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<tr>
<td>Energy Engineer</td>
<td>6.4%</td>
<td>$97,250</td>
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<tr>
<td>Engineering Manager</td>
<td>5.5%</td>
<td>$137,720</td>
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<tr>
<td>Fuel Cell Engineer</td>
<td>8.8%</td>
<td>$85,880</td>
</tr>
<tr>
<td>Inside Sales Representative</td>
<td>5.1%</td>
<td>$78,830</td>
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<tr>
<td>Machinist</td>
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<td>$53,670</td>
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<tr>
<td>Manufacturing Plant Manager</td>
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<td>$100,580</td>
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<tr>
<td>Materials Engineer</td>
<td>1.6%</td>
<td>$94,610</td>
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<tr>
<td>Materials Scientist</td>
<td>7.1%</td>
<td>$99,530</td>
</tr>
<tr>
<td>Mechanical Engineer</td>
<td>8.8%</td>
<td>$85,880</td>
</tr>
<tr>
<td>Metal Worker</td>
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<td>$35,820</td>
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<tr>
<td>Microsystem Engineer</td>
<td>6.4%</td>
<td>$97,250</td>
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<tr>
<td>Nanosystems Engineer</td>
<td>6.4%</td>
<td>$97,250</td>
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<tr>
<td>Nuclear Engineer</td>
<td>3.8%</td>
<td>$105,810</td>
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<td>Photonic Engineer</td>
<td>6.4%</td>
<td>$97,250</td>
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<tr>
<td>Quality Control Manager</td>
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<td>$100,580</td>
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<td>Robotics Engineer</td>
<td>6.4%</td>
<td>$97,250</td>
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<tr>
<td>Solar Energy Systems Engineer</td>
<td>6.4%</td>
<td>$97,250</td>
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<tr>
<td>Supply Chain Engineer</td>
<td>6.4%</td>
<td>$97,250</td>
</tr>
<tr>
<td>Technical Director</td>
<td>12.2%</td>
<td>$71,620</td>
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<tr>
<td>Technology Education Teacher, High School</td>
<td>6.4%</td>
<td>$58,660</td>
</tr>
<tr>
<td>Occupation</td>
<td>Growth Rate</td>
<td>Salary</td>
</tr>
<tr>
<td>------------------------------------------</td>
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<tr>
<td>Telecommunications Engineering Specialist</td>
<td>6.5%</td>
<td>$104,650</td>
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<td>Transportation Engineer</td>
<td>10.6%</td>
<td>$84,770</td>
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<tr>
<td>Wind Energy Engineer</td>
<td>6.4%</td>
<td>$97,250</td>
</tr>
</tbody>
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* 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

### Contact Information

Materials Science and Engineering Program | ECG 202  
semte@asu.edu | 480-965-2335