### Undergraduate Engineering Stats (as of Spring 2020)

<table>
<thead>
<tr>
<th></th>
<th>BE/BME</th>
<th>EE</th>
<th>ESE</th>
<th>ME</th>
</tr>
</thead>
<tbody>
<tr>
<td># Concentrators</td>
<td>95</td>
<td>37</td>
<td>42</td>
<td>78</td>
</tr>
<tr>
<td>% SB (vs. AB)</td>
<td>46%</td>
<td>84%</td>
<td>48%</td>
<td>88%</td>
</tr>
<tr>
<td>Median Class Size</td>
<td>25</td>
<td>21</td>
<td>16</td>
<td>28</td>
</tr>
</tbody>
</table>

### Where have our recent graduates gone?

A few examples of where recent alumni are currently:

- **Raytheon**
- **Medtronic**
- **Chevron**
- **Amazon**
- **United States Forest Service**
- **Boeing**
- **Intuitive Surgical**

### You’re invited to learn more!

**Talk to our engineering advisors:**

- **Electrical & Mechanical Engineering:**
  - Chris Lombardo
  - lombardo@seas.harvard.edu

- **Bioengineering / Biomedical Engineering:**
  - Linsey Moyer
  - lmoyer@seas.harvard.edu

- **Environmental Science & Engineering:**
  - Patrick Ulrich
  - pulrich@seas.harvard.edu

**Learn more on the web:**
www.seas.harvard.edu/engineering

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**Engineering @ SEAS**

Engineers **solve** real-world problems by applying math and science for **analysis** and **design**.

### Bioengineering

At the intersection of life and physical sciences biomedical engineers apply principles of engineering to understand and model living systems and design novel therapies to improve human health.

Degrees offered: Engineering Sciences SB (Bioengineering track); Biomedical Engineering AB

### Electrical Engineering

Covers a range of research areas from devices to systems, offering ample research opportunities, both theoretical and experimental, at the forefront of the field and its interdisciplinary applications.

Degrees offered: Electrical Engineering SB; Engineering Sciences AB (Electrical and Computer Engineering Track)

### Environmental Science and Engineering

To understand, predict, and respond to natural and human-induced environmental change, environmental scientists and engineers provide technical solutions and advance innovations in environmental measurements, modeling, and control.

Degrees offered: Engineering Sciences SB (Environmental Science and Engineering track); Environmental Science and Engineering AB

### Mechanical Engineering

Mechanical engineering uses the principles of physics and materials science for the analysis and design of mechanical and thermal systems.

Degrees offered: Mechanical Engineering SB; Engineering Sciences AB (Mechanical and Materials Science and Engineering Track)
What problem do you want to solve?

Senior theses in the Class of 2018:
- Prototyped a mug to keep tea the perfect drinking temperature using a novel wax substrate for thermal control (ME SB)
- Built a model to estimate carbon storage in tidal marshes over the next 50 years under different restoration scenarios (ESE SB)
- Conceived a prototype for a personal cooling jacket
- Created soft wearable sensors to measure stresses in prosthetic sockets (BE SB)
- Developed a novel way to keep tea the perfect drinking temperature
- Designed and fabricated a personal cooling jacket
- Tested the impact of different restoration scenarios on carbon storage in tidal marshes

Frequently asked questions

- What’s the difference between Bachelor of Arts (A.B.) and Bachelor of Science (S.B.)?
  - AB: 14-16 courses, more flexible requirements, can do research thesis, can do joint concentration
  - SB: 20 courses, engineering design courses, including individual capstone design project in ES100 (this is a required thesis), ABET-accredited (for professional licensure)

- How can I get involved in research?
  - Term-time: SEAS labs welcome undergraduates to work on research projects during the term
  - During summer: Students regularly join SEAS labs with funding through PRISE, HCRP, HUCE
  - Many students participate in research at other universities through NSF REU programs

Tips for all students:

- **First year**: At least two courses toward the concentration should be taken each term
- **Sophomore year**: Generally, three courses toward the concentration should be taken each term
- Foundational math, physics, science, and gateway courses generally count toward any of the engineering concentrations
- **Summer**: Students have the flexibility to switch between programs through sophomore year
- **Mathematical and Physical Sciences**: Students should start math fall of their first year according to their placement (i.e., start at Math Ma, 1a, 1b, or 21a) and continue each semester until completion of the 21a/b series, which is required of all students. SB students starting in Math 1b and beyond will need to take additional advanced math courses beyond foundational math.

Tips for Bio/BME students:

- Most Bio/BME students take ES 53 in sophomore fall, though some take the course in fall of first year
- While not strictly required for the SB program, many premed SB students take LS 1b (beyond concentration requirements)

Tips for EE students:

- First-year students who place out of Math 1b can take ES 155 in their first fall semester
- First-year students who take CS50 in fall or have programming experience can take CS141 in spring
- Strongly recommended to start physics in first year to be able to take ES152 (co-req Physics b) in sophomore year

Tips for MechE students:

- Almost all MechE students take ES 120 in sophomore spring

Tips for students interested in Computer Science:

- First-year students who place out of Math 1b can take ES 155 in their first fall semester
- First-year students who take CS50 in fall or have programming experience can take CS141 in spring
- Students are highly encouraged to consider PS11 in spring of first year

### Common course sequences for the first two years

#### General Guidelines

- **First Year**
  - Foundational Math: Science or Gateway Engineering
  - **Fall**
    - Foundational Math
    - Science or Gateway Engineering
  - **Spring**
    - Foundational Math
    - Science or Gateway Engineering

- **Sophomore**
  - Foundational Math (if needed)
  - Science or Engineering

#### Electrical engineering

- **First Year**
  - Foundational Math
  - Physics (if needed)
  - **Fall**
    - Foundational Math
    - Physics (if needed)
  - **Spring**
    - Foundational Math
    - Physics

- **Sophomore**
  - Foundational Math (if needed)
  - Physics (if needed)
  - **Fall**
    - Foundational Math
    - Physics
  - **Spring**
    - Foundational Math
    - Physics

#### Bio/biomedical engineering

- **First Year**
  - Foundational Math
  - Physics
  - **Fall**
    - Foundational Math
    - Physics
  - **Spring**
    - Foundational Math
    - Physics

- **Sophomore**
  - Foundational Math (if needed)
  - **Fall**
    - Foundational Math
    - Physics
  - **Spring**
    - Foundational Math
    - Physics

#### Environmental engineering

- **First Year**
  - Foundational Math
  - ESE 51
  - **Fall**
    - Foundational Math
    - ESE 51
  - **Spring**
    - Foundational Math
    - ESE 51

- **Sophomore**
  - Foundational Math (if needed)
  - Physics
  - **Fall**
    - Foundational Math
    - Physics
  - **Spring**
    - Foundational Math
    - Physics

#### Mechanical engineering

- **First Year**
  - Foundational Math
  - ESE 51
  - **Fall**
    - Foundational Math
    - ESE 51
  - **Spring**
    - Foundational Math
    - ESE 51

- **Sophomore**
  - Foundational Math (if needed)
  - Physics
  - **Fall**
    - Foundational Math
    - Physics
  - **Spring**
    - Foundational Math
    - Physics

### Gateway Courses

- **Electrical**
  - ES 50 (Spr)
  - ES 51 (Fall, Spr)

- **Mechanical**
  - ES 6 (Spr)

- **Bio/biomedical**
  - ES 53 (Fall)

- **Environmental**
  - ES 51 (Fall)