Grainger Engineering Day
Engineering Outreach Bureau

September 10, 2020
Welcome to Grainger Engineering Day

Today you’ll learn about the different engineering majors, studying abroad, college classes, and campus life.
Selin

Senior in Systems Engineering and Design, Concentration in Healthcare

Alp

Senior in Nuclear Plasma and Radiological Engineering

Aditi

Junior in Chemical Engineering

Jacob

Freshman in Chemical Engineering

Student Panel
Dean Panel

Susan Larson

Ivan Favila
What year are you in high school?

- Freshman
- Sophomore
- Junior
- Senior
Majors Overview

There are a total of 16 majors to choose from within the Grainger College of Engineering, and graduates work in nearly every industry.
Mechanical engineers apply physics and mathematics principles to study objects and systems in motion.

Mechanical engineering is one of the most diverse fields of engineering, with areas of specialization ranging from bioengineering to combustion and propulsion.

ME students take a lot of physics and math-focused courses and take ME-specific courses in later years.

ME graduates work at SpaceX, Microsoft, Ford, and Boeing, among many other companies.
Aerospace engineers study both aeronautics and astronautics, including aerodynamics, control systems, and other flight technology.

Aerospace engineers work with rockets, satellites, air/space craft, and all the systems involved.

AE students take introductory math/science courses and take more specific AE courses in later years.

AE graduates work at SpaceX, Lockheed Martin, Blue Origin, and Boeing, among many other aviation and space-faring companies.
Chemical and biomolecular engineering transform one substance into energy and other useful materials.

Chemical and biomolecular engineers study the processes of chemical reactions and how to streamline said reactions.

CHBE students take introductory math and science courses before delving into more chemistry classes and major-specific CHBE classes.

CHBE graduates work at ExxonMobil, Procter & Gamble, Clorox, and many other energy or chemical-producing companies.
Agricultural and biological engineers integrate life and engineering to enhance systems involving food, water, and other aspects of the environment.

ABE students prepare to create abundant and safe supplies of food, feed, water and energy.

Agricultural engineering students can choose one of seven specializations, ranging from nanoscale biological engineering to off-road equipment engineering.

ABE graduates work in hospitals, research facilities, and in crop production.
Materials science and engineering students study materials and their possible applications, such as semiconductors and nanotechnology.

MatSE students work on the forefront of technology and seek to understand the design, fabrication, and engineering of common materials.

MatSE students take introductory math, physics, and chemistry courses, and transition into major-specific MSE classes.

MatSE graduates work at Kraft Foods, 3M, Intel, Texas Instruments, among many other companies.
Nuclear, plasma and radiological engineering is a diverse field of engineering with many different focus points.

NPRE students can study nuclear power systems, radiation safety, medical technology and plasma technology.

NPRE students take introductory math, science, and physics courses before moving on to NPRE-specific classes in later years.

NPRE graduates can work at Intel, ASML (semiconductor company), and within the Department of Energy.
Electrical engineering study the theory and applications of electricity and electrical systems.

EE (double E) students seek to understand how electricity functions and is utilized in our world.

EE students take ECE classes focused on computer systems, digital logic, and semiconductors along with math and physics courses.

EE graduates work at Google, IBM, Apple, General Electric, and many other companies that produce electrically-powered products.
Computer engineering is closely related to electrical engineering, with an emphasis on how electrical principles are applied to computer systems.

CE students also take ECE courses and work closely with EE students.

CE students also take computer science courses alongside their math and science courses.

CE graduates can work at Intel, HP, IBM, or as programmers. Many companies that CE graduates work at also hire EE graduates.
Computer science students examine computational processes at a theoretical level.

CS students learn various programming languages and how to communicate with computers to achieve goals.

CS students take CS courses about algorithms and other CS principles, along with various math courses.

CS graduates can work at Microsoft, Google, Apple, Amazon, and any other tech-focused companies.
Bioengineering combines the methodology of engineering with the biological and medical sciences.

BE students gain an understanding of biological phenomena and develop new technologies for biological systems.

BE students take BIOE courses along with math, science, and physics courses.

BE graduates can work at hospitals, medical research institutions, Johnson & Johnson, and many other medical/personal care companies.

Bioengineers focus on the application of engineering to medicinal processes and technology, while biological engineering focuses more on biological and environmental applications.
Civil and environmental engineers study structures and construction methods.

Civil and environmental engineers have a responsibility for the design and construction of buildings, bridges, highway systems, and airports.

CEE offers specialization in:
- Energy-Water-Environment Sustainability
- Sustainable and Resilient Infrastructure Systems
- Environmental Engineering and Science
- Structural Engineering
- Societal Risk Management
- Construction Engineering and Management
- Construction Materials
- Geotechnical Engineering
- Transportation Engineering
- Water Resources Engineering and Science

CEE graduates go on to work at Comcast, Lockheed Martin, and construction, water utility, or transportation companies.
Engineering physics is a major offered through the Physics department that studies physics and its applications to engineering.

Engineering physics covers topics like mechanics, relativity, electromagnetism, quantum physics, and particle physics.

Engineering physics students take more advanced math and physics courses later into college.

Engineering physics graduates go on to work in academia, the semiconductor and nanoelectronics industry, and many other fields.
Industrial engineering focuses on the streamlining of processes in order to improve quality and productivity in the supply chain.

IE students take SE classes alongside the usual engineering course load of math, science, and physics courses. These classes often involve the use of computer-aided design (CAD) programs.

IE graduates can work at Amazon, Caterpillar, Deloitte, ComEd, and many other manufacturing/transportation companies.
Systems engineering studies engineering sciences and design, emphasizing knowledge of specific engineering fields to solve real-world problems.

SE students can specialize in control systems, engineering administration, engineering marketing, pre-law and operations research.

SE graduates can go on to work at Wells Fargo, Lockheed Martin, Raytheon, Dell and many other systems-driven companies.
Engineering undeclared students’ first year is an opportunity to explore all the different engineering majors and choose the one right for them.

Undeclared students take a class called Engineering 101, which further explains each type of engineering. After their first year, students can declare a major and jump right in.

Undeclared students can go on to work anywhere!
Leaning towards a major?

- **Motion**
  - Mechanical Engineering
  - Aerospace Engineering

- **Technology**
  - Electrical Engineering
  - Computer Science
  - Computer Engineering
  - Nuclear, plasma, and radiological engineering

- **Nature**
  - Bioengineering
  - Chemical and Biomolecular Engineering
  - Materials Science and Engineering
  - Civil & Environmental Engineering

- **Process**
  - Industrial Engineering
  - Systems Engineering and Design
Your Academic Life.
What will my classes look like?

First Year
- Chemistry, Physics, Calculus, Intro to Engineering, General Education Courses

Second and Third Year
- Major Specific courses oriented around group work, labs, and design

Fourth Year
- Senior Design or Capstone Project
  - 3-10 project members
  - 20-60 students
  - 100+ students
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<tr>
<th>Program</th>
<th>Description</th>
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<tr>
<td>Morrill Engineering Program</td>
<td>Empowers African American, Hispanic, and Native American engineering students, support their success as scholars, and fosters a collaborative community</td>
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<tr>
<td>International Student Programs</td>
<td>Enhances academic, professional, and leadership development through networking among international and domestic students, faculty, and staff.</td>
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<td>Women in Engineering</td>
<td>Provides a welcoming and supportive environment for female students in the College of Engineering</td>
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<tr>
<td>Center for Academic Resources</td>
<td>Provides academic support, enhances collaborative learning opportunities, and promotes positive influence through peer mentoring</td>
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Where do Illinois Engineers Work?
How do I get a job?
$221 Million in Research Expenditures

Beckman Institute

Research Park

Can I partake in research as an underclassmen?
Study Abroad

Studying abroad is a great opportunity for students to experience unique places and cultures while still receiving a top-ranked education.
Study Abroad

• Programs in 50+ Countries
• Scholarships available
• 27% of engineering students study abroad each year
• Most students are able to graduate in 4 years
• Questions? Email ipeng@illinois.edu
Dublin, Ireland
Beth Callis
Spring 2019
University College Dublin

- Spring 2019 (Jan-May)
- **12 credit hours:** All counted towards degree requirements
- Thermodynamics, Mechanics, Irish culture, Environmental Policy
- **Housing:** on campus, apartment-style dorms (4 roommates)
- **Travel:** Ireland, UK, Netherlands, Germany, Switzerland, Italy, Spain, Portugal
Travel
Are you interested in studying abroad?

Yes  No
Housing and Campus Life.
Where can I live on campus?
Are there Engineering-Specific Clubs?
What else can I do on campus?

- Home to over 4,000 Student Organizations
- Home to 19 Big 10 Sports Teams
- Home to a large music department
Will our Illini be playing in Indianapolis in April 2021?

Yes

Yes, but in orange
Want to experience campus from the comfort of home?

There are drone tours, guided tours led by Grainger tour guides and staff, and live tours/Q&A with student tour guides.

These are all great opportunities to get a feel for the campus!