

# Agricultural AND Biological ENGINEERING

Undergraduate Program





# INTEGRATING *Life* and *Engineering*



The Department of Agricultural and Biological Engineering at the University of Illinois (ABE@Illinois) integrates life and engineering for the enhancement of systems involving agriculture, food, energy, and environment. We are an ABET-accredited engineering program that combines fundamental engineering skills with understanding and the ability to design complex systems in some of the world's areas of greatest need.

We prepare you to create abundant and safe supplies of food, feed, water, and energy; to design healthier, more sustainable indoor and outdoor environments; and to develop new technology at both micro and macro levels. Our graduates are equipped to analyze data and manage information for complex systems. In a world with finite resources and nearly 7.5 billion people, these are skills that are valued on both local and global scales.





# TOP 5 Reasons to join ABE@Illinois

1. Be part of a #1-ranked program in two highly respected colleges: the College of Agricultural, Consumer and Environmental Sciences (ACES) and the College of Engineering (*U.S. News & World Report, 2014*).
2. Take advantage of the benefits of a Big Ten campus while enjoying the department's community atmosphere, where faculty know you by name.
3. Enjoy a flexible curriculum that allows you to develop an area of expertise while providing foundational knowledge in multiple areas.
4. "Learn by doing" in a variety of experiential learning settings.
5. Discover options after graduation ranging from professional or graduate school to job opportunities in industry, government, academia, and non-profit and consulting work.

## ADMISSIONS

University of Illinois admissions decisions are based on a holistic review of each student's application, including test scores, course rigor, grades, leadership and volunteer experiences, and essays. For more information, contact [admissions.illinois.edu](mailto:admissions.illinois.edu).

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## SCHOLARSHIPS AND FINANCIAL AID

- ABE@Illinois offers more than \$30,000 in scholarships to continuing students.
  - The Colleges of ACES and Engineering provide more than \$3 million in financial support to incoming and continuing students each year.
  - The U of I Office of Student Financial Aid awards assistance from federal, state, university, and private resources. For more information: [osfa.illinois.edu](http://osfa.illinois.edu).
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“The department enforces a strong work ethic and the value of teamwork, and they set the expectation of holding a deep understanding of your subject. Those principles are key ingredients for success today.”

– MICHAEL BOSTON, '95

## BENEFITS OF JOINING A TOP-RATED DEPARTMENT

- An undergraduate student-to-faculty and student-to-advisor ratio of 19:1
- Average class size of fewer than 20 students in upper-level courses
- Two-thirds of faculty members ranked excellent by students in the last five years, with many winning campus and national teaching awards
- Field trips and social gatherings for new students to meet other students, advisors, and faculty in ABE
- Professional and peer mentoring offered as early as the first semester
- Learning communities that equip students to network better within their cohorts, develop community, and improve academic performance

## A FLEXIBLE CURRICULUM

- Complete core engineering, math, and science courses to establish your technical foundation
- Develop an expertise by selecting upper-level ABE courses in your area of interest
- Enhance this expertise by taking relevant courses in other engineering disciplines
- Increase your knowledge base by choosing from over 100 biological and natural sciences courses
- Enrich your education with general education courses
- Find the right combination of courses for your career and educational goals

## ADVANTAGES OF A VIBRANT CAMPUS

- A breadth of academic programs with broad academic excellence
- Internationally renowned faculty
- World leadership in research, teaching, and public engagement
- Big Ten athletic events and a variety of recreation facilities
- Top-notch library system
- Wide-ranging artistic, musical, and cultural events





## ONE MAJOR, SEVEN PATHS

### Bioenvironmental Engineering

Design systems that provide desired environmental conditions for animals, people, crop storage, and greenhouses; develop systems to handle and treat biowaste; design and manufacture structures.

### Ecological Engineering

Design products for wetland, compost, restoration, phytoremediation, and integrated agriculture ecosystems; foster long-term system sustainability; develop and evaluate business models for engineered ecosystems.

### Food and Bioprocess Engineering

Make useful food, feed, and energy products; develop and test new human and animal food and food ingredients; evaluate environmental factors and energy efficiencies associated with food and energy processing.

### Nanoscale Biological Engineering

Design and manipulate biomolecular, metabolic, and subcellular processes; modify cell behavior; analyze nanoscale systems such as biosensors and particle delivery mechanisms.

### Off-Road Equipment Engineering

Design, manufacture, and test agricultural, construction, and mining equipment; create equipment control systems for automating machinery; design specific machine components as well as complete machinery.

### Renewable Energy Systems Engineering

Design energy systems reliant on sunlight, wind, geothermal, and biomass; create systems for collecting and converting renewable energy into thermal or electrical energy; develop and evaluate business models for renewable energy projects.

### Soil and Water Resources Engineering

Control erosion, sediment, and non-point source pollution; design systems that sustain and improve water quality, storm water management, and flood control; develop irrigation, water management, and drainage systems for sustainability.



“The ABE program is a small, tight-knit group. By the time we took our senior design project course, we had taken many classes together and knew each other well. It made for a great experience.”

- MATTHEW FULL, '05



“ ABE grads go on to have such varied and prominent positions throughout academia, society, and industry that there’s often someone with expertise to turn to when you need it. That’s just being part of the ABE family.”

- GREG BYARD, M.S. '09

## EXPERIENTIAL LEARNING

### On campus

#### Undergraduate Research

Our students are encouraged to participate as undergraduates in research with our award-winning, world-renowned faculty while earning credit hours or pay for part-time employment. You can submit posters, papers, or presentations on your research findings at international meetings.

#### Student Clubs and Competitions

More than 1,000 student organizations are active across campus. Nearly 80 percent of our students gain leadership experience in club activities, including these:

- American Society of Agricultural and Biological Engineers (ASABE)
  - » 1/4-scale tractor design competition (Illini Pullers)
  - » Fountain wars
  - » Robotics competition
- International Genetically Engineered Machine (iGEM)
- Illini Algae
- Solar Decathlon
- Illini Agricultural Mechanization Club



## In the classroom

Learn not only the theory but also the application and practice in our classes. Over half of our courses have a laboratory component, and with average lab sizes of just 20 students, you can expect personal attention from our world-class faculty.

Start your ABE@Illinois career in your first semester, with a hands-on research project in ABE 100. Students work in teams with a faculty or graduate-student mentor to complete a research or design project in their area of interest.

Top off your experience with an industry-sponsored design project in our capstone course, ABE 469. Students work in teams with an industry partner to solve a real-world problem.

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## In the real world

### Study Abroad

Some 400 programs are available to ABE students to study abroad, with programs in over 100 countries ranging from 10-day to year-long experiences. Learn more from the College of ACES Education Abroad Programs Office, International Programs in Engineering, or the campus Study Abroad Office. Most recently, ABE has offered summer programs led by faculty to Puerto Rico, Brazil, China, Greece, and South Africa. We also sponsor semester-long exchange programs to Brazil, Greece, Italy, Ireland, and Spain. Don't miss out on applying for departmental and college scholarships to support your study abroad experience.

### Internships and Placement

More than 80% of our students land at least one internship, with many interning each summer. Through internship experiences, you can apply what you have learned in the classroom and become competitive for the job market or graduate school.

The average starting salary for ABE graduates is \$61,000. Our students work as project, test, reliability, civil, environmental, mechanical design, product, agricultural, design, and biological engineers. They are employed by Fortune 500 companies, consulting firms, academia, government agencies, non-profit groups, and research institutions.





FOR MORE INFORMATION OR TO  
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