EXPLORE

Biological Engineering

PennState
College of Engineering

Our curriculum integrates engineering design and analysis with agricultural, biological, and environmental sciences to prepare graduates to find creative solutions to critical global problems.

The biological engineering program offers three specialized degree options that allow students to focus on key areas:

- **Agricultural Engineering:** Develop advanced power and machinery systems utilizing robotics and precision techniques for agricultural crop production and other off-road applications.
- **Food and Biological Process Engineering**: Design efficient processing lines to convert raw materials into valuable products, such as safe, high-quality foods, pharmaceuticals, biologically-based energy, and other sustainable materials.
- **Natural Resource Engineering**: Protect water quality from non-point pollution sources like nutrient and stormwater runoff by applying best management practices and green infrastructure design principles.

Biological engineering students benefit from the resources and facilities of the College of Engineering and the College of Agricultural Sciences. The Agricultural Engineering Building features state-of-the art teaching and research labs, a capstone design studio, classrooms, and student collaborative spaces.

Biological engineering classes at Penn State are small (10-55 students/class) and emphasize applications, providing opportunities for students to connect directly with faculty and peers, and engage in hands-on lab experiences. The curriculum culminates in a two-semester capstone experience where each student team tackles a unique real-world challenge sponsored by faculty, industry, or a local community.

For more information, visit abe.psu.edu.

BE Hear from students and alumni by watching the Exposure to Major video series: **bit.ly/PennStateEngineering**

Research and Work Experience

Build on classroom learning with internships, co-ops, and undergraduate research projects such as: performance development engineering intern at Cummins, supply chain co-op at Bristol-Myers Squibb, and stream restoration intern at U.S. Fish & Wildlife Service.

Minors

Customize the curriculum by choosing electives that can lead to a minor in biomedical engineering, environmental engineering, engineering leadership development, entrepreneurship & innovation, international agriculture, off-road equipment, or watersheds & water resources.

Global Experience

Gain a global perspective by spending a semester abroad (e.g., Ireland, Spain, Australia) or taking a Penn State class with a short-term, embedded travel experience (e.g., Chile, Costa Rica, France, Kenya, New Zealand).

Engagement Opportunities
Explore biological engineering outside the classroom by networking with alumni, meeting industry guest speakers, traveling to conferences, and participating in design competitions. Organizations include American Society of Agricultural and Biological Engineers Student Branch, Society for Industrial Biotechnology, and Penn State Pullers (1/4 scale tractor team).

What is a biological engineer?

Biological engineers make a difference—they find the sustainable solutions needed to supply a growing world population with food, fiber, water, and energy under increasing environmental constraints.

Examples of career opportunities: Hydraulic systems engineer at CNH Industrial; drivetrain test engineer at John Deere; associate service engineer at The Timken Company; continuous improvement engineer at Mondelez International; production engineer at Archer Daniels Midland; associate scientist at Merck; state conservation engineer at Natural Resources Conservation Service; project manager at LandStudies, Inc.; water resources engineer at Dewberry

Examples of graduate education opportunities: Biological systems engineering at University of California, Davis; civil and environmental engineering at Colorado State University; food science at Penn State; biomedical engineering at Columbia University; dental medicine at University of Pennsylvania; mechanical engineering at Penn State

"Biological engineering is a very small department, so we were a tight-knit group. Our advisers were always very forthcoming and wanted us to succeed. Different classes I took, along with my internship experience, helped me learn a lot about the food and beverage industry so I wasn't caught off guard when I went out in the real world. These experiences made me adapt and evolve, and helped me in my career."

– Swetha Pillai

abe.psu.edu