Food, Agricultural and Biological Engineering

Food, agricultural and biological engineers strive to serve society and to improve our environment. They identify and solve engineering problems related to renewable energy; environmental issues; producing safe, healthy, nutritional-value-added food products; and other areas where natural earth systems can be engineered to be more productive for humanity, yet protected for a sustained and secure future.

Pursuing Food, Agricultural and Biological Engineering at Ohio State

Students interested in specializing in agricultural, biological, ecological or food engineering should have completed a high school college preparatory curriculum which included chemistry, math and physics. They should have excellent ACT/SAT scores as well as a strong high school academic record.

Students may directly enroll as pre-engineering students; however, selection is competitive. Factors used to determine eligibility to directly enroll include ACT/SAT scores (emphasis on math), strong college prep curriculum (emphasis on math, science and rigorous courses), and class rank or GPA. The middle 50% of directly enrolled pre-majors for autumn 2014 had an ACT score range of 28–32 and 96 percent were in the top 25% of their high school classes. Students not eligible to directly enroll in engineering may enroll in Science, Technology and Environment Exploration (see exploration.osu.edu).

Acceptance into the Department of Food, Agricultural and Biological Engineering requires enrollment in the College of Engineering and a cumulative point-hour ratio (CPHR) and eligibility point-hour ratio (EPHR) that meets or exceeds the current acceptance standard of 2.0. The EPHR is calculated from earned grades in Math 1151, 1172, Chemistry 1250, Physics 1250, Engineering 1181 and 1182, or their equivalents.

Program Educational Objectives

Food, agricultural and biological engineering graduates are always striving to serve society and to improve our environment.

The program leading to a degree in food, agricultural and biological engineering at The Ohio State University guides, nurtures and informs students to become alumni who:

1. will engage in engineering careers in industry, academia, government and other organizations and/or enroll in advanced degrees in engineering programs or professional schools.
2. will participate in professional organizations and seek advancement in their careers.
3. will pursue professional development opportunities and become valued members of their communities.

The Student Outcomes supporting our Educational Objectives can be found at go.osu.edu/fabe_outcomes.

For more information, check these websites:

Fabe.osu.edu/fabe
Engineering.osu.edu
Osu.edu

Program Requirements

In order to receive a well-rounded education, students must also take courses to meet the General Education (GE) requirement. GE courses include communication skills, social diversity, social sciences, and arts and humanities in addition to the scientific and technical demands of the engineering curriculum. A minimum of 132 semester hours are required for graduation.

Agricultural engineering requirements:
- General chemistry (4 credit hours)
- Mathematics (14 credit hours)
- Physics (10 credit hours)
- Computer programming (2 credit hours)
- Engineering (16 credit hours)
- FABE core courses (43 credit hours)
- Technical electives (14 credit hours)
- General education (24 credit hours)

Food, biological and ecological engineering requirements:
- Chemistry (8-14 credit hours)
- Biology (3-9 credit hours)
- Mathematics (14 credit hours)
- Physics (10 credit hours)
- Computer programming (2 credit hours)
- Engineering (12-14 credit hours)
- FABE core courses (31-40 credit hours)
- Technical electives (9-10 credit hours)
- General education (24 credit hours)

The Agricultural Engineering Building in Columbus was built in 1987 to encompass 97,000 square feet of classrooms, teaching and research laboratories, student activity areas, computer facilities, and faculty and administrative offices. Additional technical facilities and laboratories are located at The Ohio Research and Development Center in Wooster, Ohio.

Co-Curricular Opportunities

Cooperative education (co-ops) and internship programs are not required by the College of Engineering, but are strongly encouraged as early as the summer after freshman year. These career-related, “hands-on” opportunities are very important to career development and are required by some employers.

The American Society of Agricultural and Biological Engineers Student Branch (ASABE) offers students opportunities to participate in professional and social activities with their peers locally, nationally and internationally. Club meetings are open to anyone who is interested in joining the team and include visiting guest speakers, industry-oriented programs, and/or social and recreational activities.
The 1/4 Scale Tractor Team annually designs and builds a working prototype tractor for entry in an international inter-collegiate student competition. Entry in this competition facilitates the application of the team's engineering knowledge and organizational skills while providing a venue for students to interact with nearly 100 industry professionals.

Honors & Scholars Programs
An Honors Program is available through the College of Engineering for qualified students. Honors students have opportunities for research, have scheduling priority each semester, and graduate with Honors and/or distinction. Visit engineering.osu.edu/honors for more information.

Career Prospects in Food, Agricultural and Biological Engineering
Graduates with an interest in the mechanical aspects of agricultural engineering may find careers manufacturing equipment for farming, forestry, construction, transportation, global positioning, homeland security, and lawn, garden and recreational markets. Graduates interested in engineering solutions for environmental issues in agriculture may find careers at environmental agencies, consulting firms, and manufacturers and suppliers of drainage and irrigation equipment. Graduates of the food engineering specialization use their skills to design sustainable and environmentally responsible food processes for manufacturing safe, tasty, healthy, convenient food products.

Graduates of the biological engineering specialization have opportunities for careers in biotechnology, bio-energy, bio-products, biomedical applications, biochemical processing, pharmaceuticals and bio-instrumentation. These students may also choose to prepare themselves for admission to either veterinary or medical school. The department has a strong positive record of admissions to such professional schools.

Graduates of the ecological engineering specialization will have career opportunities designing and restoring natural ecosystems like streams, wetlands and coastal systems. Graduates may work for the Environmental Protection Agency, the United States Department of Agriculture, and the Army Corps of Engineers and environmental consulting firms.

Beginning salaries for engineers with a degree in food, agricultural and biological engineering are on average $50,000–60,000 annually, depending on the candidate’s skills and work experience.

Curriculum Sample
There is a separate curriculum for each specialization within food, agricultural and biological engineering. Since university students need more than specific education in a narrow field, they also will take classes to complete General Education (GE) requirements. Because GE courses come from a variety of academic areas of study, this course work helps students develop fundamental skills essential to collegiate success and allows them to tailor these courses toward their interests. Note: This sample represents one of several possible paths to a degree in food, agricultural and biological engineering. Consult the departmental website, fabe.osu.edu, for details on each specific specialization.

Freshman Year:
- Introduction to Engineering 4
- Computer Programming 2
- Math 10
- Chemistry 4–10
- Biology 0–4
- Physics 5
- Engineering Survey 1
- Total hours 32–33

Sophomore Year:
- FABE core courses 8
- Computer Programming 2
- Advanced Biology 2–3
- Chemistry 4
- Math 4
- Physics 5
- Statics and Material Mechanics 4
- GE courses 3
- Total hours 32–33

Junior Year:
- Biology 7
- FABE core courses 13
- Computer Graphics 2
- Engineering Economics 2
- Engineering Project Management 2
- GE courses 9
- Total hours 35

Senior Year:
- FABE core courses 4
- Capstone Design Project 6
- Technical electives 9–10
- GE courses 12
- Total hours 31–32

Revised July 2015. Information subject to change. For the most up-to-date information on the food, agricultural and biological engineering program, please visit fabe.osu.edu.

Contact information:
Bev Barrick | Undergraduate Program Coordinator
260B Agricultural Engineering
590 Woody Hayes Drive
Columbus, Ohio 43210-1057
614-247-6735 | barrick.3@osu.edu

Gönül Z. Kaletunç | Professor
210 Agricultural Engineering
590 Woody Hayes Drive
Columbus, Ohio 43210-1057
614-292-0419 | kaletunc.1@osu.edu

Agricultural engineering and food, biological and ecological engineering programs are accredited by the Engineering Accreditation Commission of ABET. abet.org