

# Food, Agricultural & Biological Engineering

**F**ood, agricultural, and biological engineers are always striving to serve society and to improve our environment. Fabe graduates use their skills to identify and solve engineering problems related to renewable energy, environmental issues, healthy and productive processes, packaging and transportation methods for food, and other areas where the natural systems of our earth can be engineered to be more productive for man today and tomorrow, yet protected for a sustained and secure future for both.

## Pursuing Food, Agricultural and Biological Engineering at Ohio State

For unconditional admission, students interested in FAB 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 who come to Ohio State to study engineering with a minimum ACT Math score of 24 or SAT Math score of 560 will be directly enrolled as pre-engineering students in the College of Engineering. Those students not eligible to directly enroll in engineering may enroll in the Science and Technology Exploration Program, part of our Exploration Program described further at [exploration.osu.edu](http://exploration.osu.edu).

Acceptance into the FAB engineering major requires enrollment in the College of Engineering and a cumulative point-hour ratio (CPHR) and secondary point-hour ratio (SPHR) that meets or exceeds the current acceptance standard of 2.0. SPHR is calculated upon completion of the following courses: Math 152, Chemistry 121, Physics 131, and Engineering 183.

## Program Educational Objectives

At graduation, Fabe graduates will be prepared to:

- Enter the engineering profession, a graduate program, or a professional school such as veterinary or human medicine
- Apply fundamental principles of mathematics, science, and engineering to define and solve food, agricultural and biological engineering problems
- Work in teams and individually to design components and systems for applications in one or more of the focus areas of food, agricultural and biological engineering
- Apply the latest techniques of analysis, data collection, modeling, project management, professional development, written communication and oral presentation
- Become a socially responsible engineer, an effective member of a community and a well-rounded citizen

## FAB Engineering Curriculum

During college, students must take courses to meet the General

Education Curriculum (GEC) requirement. GEC hours include writing and related skills, social diversity, social sciences and the arts and humanities, in addition to the scientific and technical demands of the engineering curriculum.

A minimum of 195 quarter hours are required for graduation, including 35 hours of GECs, 90 hours of engineering courses, 43 hours of major core courses, and 27 hours of related elective courses. Cooperative education (co-ops) and internship programs are not required by the College of Engineering, but are strongly encouraged, beginning as early as the summer after freshman year. These career-related, "hands-on" opportunities are important to career development.

## Co-Curricular Opportunities

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 include guest speakers, industry-oriented programs, and/or social and recreational activities.

The ¼-Scale Tractor Team builds a working scale model of a tractor designed specifically to compete in an international, intercollegiate tractor-pull and maneuverability contest every spring. Designing and building this tractor hones the team's engineering skills while providing both a fun diversion and an educational experience.

## Honors & Scholars Programs

An Honors Program is available through the College of Engineering for qualified students. Having honors status provides opportunities for research and eventual graduation with honors and/or distinction, plus scheduling priority each quarter. Visit the website [eng.ohio-state.edu/futurestudents/honorsstudents.php](http://eng.ohio-state.edu/futurestudents/honorsstudents.php) for more information.

## Career Prospects in FAB Engineering

Potential specializations within Fabe include:

*Bio-Environmental Engineering*, where students develop the skills required to address major environmental quality issues related to air, soil, and water. Potential employers include any enterprise involved or concerned with the remediation, maintenance or prevention of environment and biological imbalances in today's society such as national government agencies, cities, townships, and consulting firms.

*"Machinery Systems" Engineering* refers to mechanical systems designed to improve the overall efficiency of machines intended mainly to reduce human physical labor to improve food

**For more information, check these web sites:**

**FAB Engineering:** [fabe.osu.edu](http://fabe.osu.edu)

**College of Engineering:** [engineering.osu.edu](http://engineering.osu.edu)

**Ohio State:** [osu.edu](http://osu.edu)

**Admissions:** [undergrad.osu.edu](http://undergrad.osu.edu)

**Multicultural Center:** [multiculturalcenter.osu.edu](http://multiculturalcenter.osu.edu)

**First Year Experience Program:** [fye.osu.edu](http://fye.osu.edu)

## Curriculum Sample

There is a separate curriculum for each specialty in food, agricultural and biological engineering. This is a sample list of classes a student will take to pursue a degree in Agricultural Engineering. Since university students need more than a specific education in a narrow field, they also will take classes to complete the General Education Curriculum (GEC). The GEC allows students to develop fundamental skills essential to collegiate success across major programs. Course work options satisfying the GEC often come from a variety of academic areas of study allowing students to tailor their GEC toward their interests. Note: This sample represents one of several possible paths to a degree in FAB Engineering. Consult the departmental web site, [fabe.osu.edu](http://fabe.osu.edu), for details.

### Freshman Year:

Introduction to Engineering	6
Computer Programming	4
Math	15
Chemistry	9
Biology*	5
Physics	10
GEC (English composition)	5
Engineering Survey	1
<b>Total hours</b>	<b>55</b>

### Sophomore Year:

GEC courses*	5
Biology*	5-10
Math	9
Chemistry*	3-6
Physics	5
Statics & Strength Materials	8
FABE core courses*	6-9
Computer Graphics	3
<b>Total hours</b>	<b>44-55</b>

### Junior Year:

FABE core courses*	11-20
Engineering Economics	3
Fluid Flow*	4
Thermodynamics & Heat Transfer*	4-7
Technical electives	10
GEC courses	10
<b>Total hours</b>	<b>42-54</b>

### Senior Year:

Professional Development	1
Technical electives*	4-14
Capstone design project	6
GEC courses	15
FABE core courses*	18-22
<b>Total hours</b>	<b>44-58</b>

\*Although similar, Food Engineering, Biological Engineering, Ecological Engineering, and Agricultural Engineering each follow a slightly different curriculum in the FABE core courses - please contact the department for detailed curriculum information.

production, handling, storage, processing and distribution and to protect and enhance the quality of those products. Potential employers include equipment manufacturers for farming, forestry, construction, transportation, global positioning, homeland security equipment, lawn, garden and recreational markets, and their distributors.

*Food Engineering* refers to all engineering activities associated with the processing, packaging, and delivery of food products from the farm to the consumer. This program is designed for students interested in entering the food processing industry, the manufacture of food processing equipment, or food plant engineering.

*Soil and Water Engineering* students specialize in learning to engineer solutions for interrelationship problems between soil, plants, air, and water. Courses on drainage, irrigation, soil erosion, quality and quantity of surface and ground waters, and the effects of soil and water management on the environment are included. Employment opportunities usually include positions with federal and state environmental agencies, consulting firms, manufacturers and suppliers of drainage, irrigation and related equipment, etc.

*Pre-Veterinary/Pre-Medicine* students can capitalize on the biological emphasis in FABE to prepare themselves for admission to either veterinary or medical school while obtaining an engineering degree. The FAB engineering program has an excellent reputation for pre-vet and pre-med academic preparation and a strong positive record of admissions to both schools.

*Ecological Engineering* students study and design natural systems that provide societal services that benefit the environment. This program offers "hands-on" experiences with nature plus a traditional engineering education. Potential employers include consulting firms, construction companies, governmental agencies, and teaching and research institutions.

Students in *Facilities Engineering* are interested in designing controlled environments such as greenhouses, livestock facilities and storage structures to meet specific environmental or climatic conditions.

Beginning salaries for FAB engineers average between \$40,000-53,000 annually, depending on the candidate's skills and work experience.

## Quality Facilities and Faculty

The Agricultural Engineering Building in Columbus, built in 1987, has 97,000 square feet of classrooms, teaching and research laboratories, student activity areas, computer facilities, and faculty and administrative offices. Additional technical facilities are located on the Ohio State campus in Wooster, Ohio.

Members of the FABE faculty have accumulated educational degrees from the most highly-respected universities in the country. The areas of expertise these instructors/researchers represent include the full range of life-science engineering from agricultural to biological and food system. Their teaching and research are well recognized for excellence and have earned many university, state, national, and international honors. The FAB engineering faculty, instructors and staff highly value the rapport they establish with undergraduate students.

**Revised July 2007.** For the most up-to-date information on the food, agricultural & biological engineering program, please visit [fabe.osu.edu](http://fabe.osu.edu).

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Ohio State's food, agricultural, and biological engineering program is accredited by the Engineering Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012 | (410) 347-7700.