

BIOLOGICAL ENGINEERING

Biological Engineering (BE) applies engineering principles to protect natural resources and to produce food, biofuels, pharmaceuticals, and other biobased products. BE incorporates foundations of biology with engineering theory and practice to develop sustainable solutions to problems facing a broad range of industries.

About this Program

- **College:** Herbert Wertheim College of Engineering (<http://catalog.ufl.edu/UGRD/colleges-schools/UGENG/>)
- **Degree:** Bachelor of Science in Biological Engineering
- **Specializations:** Agricultural Production Engineering (http://catalog.ufl.edu/UGRD/colleges-schools/UGENG/BE_BSBE/BE_BSBE01/) | Biosystems Engineering (http://catalog.ufl.edu/UGRD/colleges-schools/UGENG/BE_BSBE/BE_BSBE02/) | Land and Water Resources Engineering (http://catalog.ufl.edu/UGRD/colleges-schools/UGENG/BE_BSBE/BE_BSBE03/) | Packaging Engineering (http://catalog.ufl.edu/UGRD/colleges-schools/UGENG/BE_BSBE/BE_BSBE04/)
- **Credits for Degree:** 128
- **More Info**

To graduate with this major, students must complete all university, college, and major requirements.

Department Information

The Department of Agricultural and Biological Engineering is founded on developing, teaching, and applying engineering principles to improve and sustain agricultural and biological systems for current and future generations.

Website (<https://abe.ufl.edu/>)

CONTACT

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Map (<http://campusmap.ufl.edu/#/index/0474>)

Curriculum

- Agricultural Operations Management
- Biological Engineering
- Combination Degrees
- Packaging Engineering Certificate
- Packaging Science Minor
- Precision Agriculture Minor

Biological engineers pioneer new designs and techniques in such areas as agricultural robotics, remote sensing, bioprocessing, biofuels, precision agriculture, plant space biology, sustainability of our natural resources, and packaging product design and development.

Graduates are educated in the biological and environmental sciences as well as in engineering. They will address critical problems involving land and water resources, biological systems, production agriculture and innovations in packaging. Students can choose a focus area based on their courses of specialization and individual selection of

electives. Areas of specialization are biosystems engineering, land and water resources engineering, packaging engineering, and agricultural production engineering.

In addition to abundant job opportunities in Florida's agricultural industry, graduates have career opportunities in biotechnology and in fields related to Florida's water quality and water resources, including water management districts, environmental companies, consulting firms, equipment manufacturers, bio-energy, food engineering and the packaging industry.

The BE curriculum can also fulfill requirements for admission to professional programs as well as to graduate programs including biomedical engineering, civil engineering and mechanical engineering.

Educational Objectives

Graduates from the University of Florida's undergraduate degree program in biological engineering will be prepared for at least one of the following:

- Successful careers in the profession of biological engineering or other related fields.
- Gaining admission to a graduate and/or professional degree program.

Goals

To develop biological engineering professionals with technical proficiency and societal responsibility.

Mission

The department will develop professionals, create and disseminate knowledge, and promote the application of engineering and management principles to meet societal needs with respect to agriculture, packaging, land and water resources, and biological systems.

Academic Learning Compact

The curriculum emphasizes engineering solutions to problems associated with biological and agricultural systems that often are related to renewable natural resources. Students gain knowledge through formal courses, laboratory experimentation and individual experience. Students will learn to utilize math, science and engineering principles to analyze and interpret data, to design and conduct experiments, systems and components and to effectively communicate results within an appropriate presentation style.

Accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org> (https://urldefense.proofpoint.com/v2/url?u=http-3A__www.abet.org&d=DwMGaQ&c=pZJPUDQ3SB9JplYbifm4nt2IEVG5pWx2HBF73BYn6kEY-D7Qfs6kPA&m=-KF2G1JwsXcME70kGBMIRYTy2i4YuqEwzRran98WV1M&s=73PhSd8hcuNu3AXIyLs)

ABET EAC Program Educational Objectives, Student Outcomes, and Enrollment and Graduation Numbers can be found on the college website (<https://www.eng.ufl.edu/academics/degree-programs/accreditation/>).

Before Graduating Students Must

- Pass assessment by two or more faculty and/or industry practitioners of student performance on a major design experience.
- Pass assessment in two courses of individual assignments targeted to each learning outcome.
- Complete an exit interview in your final semester.

- Complete requirements for the baccalaureate degree, as determined by faculty.

Students in the Major Will Learn to

Student Learning Outcomes (SLOs)

Content

1. Apply knowledge of mathematics, science and engineering principles to biological engineering problems. Students will be able to apply fundamental concepts, skills and processes in biological engineering.
2. Design and conduct biological and/or agricultural engineering experiments, analyzing and interpreting the data in biological engineering.

Critical Thinking

3. Design a biological and/or agricultural system, component or process to meet desired needs within realistic economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability constraints in biological engineering.

Communication

4. Communicate technical data and design information effectively in writing and in speech to other engineers in biological engineering.

Curriculum Map

I = Introduced; R = Reinforced; A = Assessed

Courses	SLO 1	SLO 2	SLO 3	SLO 4
ABE 2012C	I, A	I, A		
ABE 3612C		R, A		
ABE 4042C	R, A		I, A	I
ABE 4043C	R, A		R, A	R, A

Assessment Types

- Assignments
- Exams
- Design projects and reports