

BACHELOR OF SCIENCE IN BIOPROCESS ENGINEERING

The [bioprocess engineering program](#) prepares students for careers as engineers in the bioprocess or biotechnology industry. The bioprocess engineering program provides instruction in the fundamentals of chemical engineering but also adds coursework in biologics / biopharmaceutical, bioprocess, biotechnology, biochemical and bioenergy. This includes a focus on developing products using sustainable source materials and methods or the application of green chemistry. The bioprocess engineering program has been accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org> following the criteria of Chemical, Biochemical, Biomolecular and Similarly Named Engineering Programs since 2012 (<https://www.aiche.org/abet-accredited-universities>).

Students gain valuable experience through a capstone-design experience in which they work on significant problems in the design and implementation of new technologies. In addition, a summer internship is required of all students during which they gain valuable skills and experience in terms of technical knowledge and professional development. Both of these experiences serve to integrate the knowledge gained in their coursework with real-world work experiences commonly seen in their first positions after graduation.

The curriculum consists of a number of categories of courses. The general education component, which is required of all ESF students, broadens the students' perspectives on global and societal issues, an important component of any education. Students also take a number of courses in math and the basic sciences—chemistry, physics, and biology—to provide the background for the courses that prepare students for engineering practice. The engineering courses cover a variety of topics that are traditional for a chemical engineering program, supplemented with courses specific to bioprocess engineering. The moderate requirement of 128 credits hour allows room for students to supplement more courses at their own desire (no limitation on free electives).

Students may be admitted to the bioprocess engineering program as first-year students with appropriate science backgrounds from their high school or as transfer students at any level with accommodations for coursework requirements. Students who have an associate degree in engineering science, chemical technology, biological sciences, or general science and mathematics are encouraged to apply as transfer students.

Lower Division Required Courses

APM 205

APM 206

APM 307

APM 485

ECH 132

ECH 133

BPE 300

EFB 103

EFB 104

EWP 190

EWP 290

FCH 150

FCH 151

FCH 152

FCH 153

FCH 221

FCH 222

FOR 207

GNE 160

EPH 201 3

EPH 202 1

EPH 203 3

EPH 204 1

ECH 202

ECH 212

General Education Electives

Course Name	Codes*	Credits
General Education Course in one of the following categories: US History & Civic Engagement, The Arts, World History and Global Awareness, World Languages	G	3
General Education Course in Diversity, Equity, Inclusion and Social Justice	G	3

Upper Division Required Courses

APM 395

Professional Experience: BPE 498

BPE 304 + BPE 306

ECH 312

ECH 322

BPE 321

ECH 323

BPE 420

BPE 421

BPE 440

BPE 450

BPE 481

ESF 200

EWP 444

ECH 324

ECH 355

ECH 371

EFB 325

*Professional experience: BPE304 must be taken in the summer + BPE306 in the after right after, while BPE498 can be taken in any semester.

Directed Electives

13 credits out of the following.

Course Name	Codes*	Credits
Science Electives		3 - 6
300 or higher Biology, Biochemistry, or Engineering Electives		7 - 10

Internships, Co-ops, and Research Experiences

Bioprocess engineering students enjoy the advantage of hands-on learning in the bioprocess and allied industries through faculty-guided internships and cooperative education (co-op) assignments. All students are required to complete an internship, co-op or research experience in the industry or in a research setting. Internships provide students with valuable experience and financial benefits. There is a two credit course following the Bioprocess Engineering experience to summarize the experience with a report and a presentation for completion of the internship.

Total Minimum Credits For Degree: 128

