# BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING

## Bachelor of Science in Chemical Engineering

Chemical engineering is a versatile program and one of the most broadly-based engineering disciplines. Its field of practice covers the development, design, control and operation of processes and products that involve molecular change, both chemical and biological, and the operation of such processes. Because many of the products that sustain and improve life are produced by carefully designed and controlled molecular changes, the chemical engineer serves in a wide variety of industries. These industries range from chemical and energy companies to producers of all types of consumer and specialty products including pharmaceuticals, textiles, pulp and paper, polymers, advanced materials, and solid-state and biomedical devices.

Careers are available in industry, government, consulting, and education. Areas of professional work include research and development, operations, technical service, product development, process and plant design, market analysis and development, process control, and pollution abatement.

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 and physics, and biology. Upper level courses cover a variety of topics in chemical engineering. Additionally, elective courses are offered for students wishing to enter into the pulp and paper industry.

Students may be admitted to the chemical 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 the associate degree in engineering science, chemical technology, 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

ECH 202

ECH 212

EFB 103

EFB 104

EWP 190

EWP 290

FCH 150

FCH 151

FCH 152

FCH 153

FCH 221

FCH 222

FCH 223
AND
FCH 224
OR
PSE 223

FOR 207

GNE 160

EPH 201

EPH 202

EPH 203

EPH 204

## General Education Electives

| Course | 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: ECH 498 2

ECH 304 + ECH 306

ECH 312

ECH 322

ECH 323

ECH 324

ECH 341

ECH 355

ECH 371

ECH 422

ECH 442

ECH 454

ECH 455

ECH 457

ESF 200

EWP 444

*Professional experience: ECH 304 must be taken in the summer and ECH 306 in the Fall semester immediately after, while ECH 498 can be taken in any semester.

## Directed Electives

14 credits out of the following directed electives.

| Course | Codes* | Credits |
|---|---|---|
| Junior or higher engineering directed electives | | 5 - 14 |

| | | |
|---|---|---|
| Science Electives | | 3 - 9 |

**Total Minimum Credits For Degree: 127**