



# Chemical Engineering

College of Engineering

A foundation in mathematics, chemistry, and physics is required for the study of chemical engineering. Fundamental principles related to the transformation of matter and energy are developed in subjects including thermodynamics, fluid flow, separations, heat and mass transfer, reactor design, and chemical process design. Undergraduate electives are available in biopharmaceutical engineering, energy and fuels, environmental engineering, and materials engineering and nanotechnology. A program is also available to fulfill pre-medical requirements simultaneously with requirements for the B.S. in chemical engineering.

Admission to the degree program is selective. Students should refer to the UK *Bulletin* for general information concerning admission and graduation requirements.

## Degree Requirements

In addition to fulfilling University Studies and College of Engineering requirements, students must complete the chemical engineering curriculum. The following curriculum meets the requirements for the B.S. degree.

### Freshman Year

First Semester	Hours
CME 101 Introduction to Chemical Engineering .....	1
CHE 105 General College Chemistry I .....	3
CHE 111 Laboratory to Accompany General Chemistry I .....	1
ENG 104 Writing: An Accelerated Foundational Course .....	4
MA 113 Calculus I .....	4
University Studies* .....	3
<b>Second Semester</b>	
MSE 201 Materials Science .....	3
CHE 107 General College Chemistry II .....	3
CHE 113 Laboratory to Accompany General Chemistry II .....	2
MA 114 Calculus II .....	4
COM 199 Presentational Communication Skills .....	1
University Studies* .....	3

### Sophomore Year

First Semester	Hours
CME 200 Process Principles .....	3
MA 213 Calculus III .....	4
PHY 231 General University Physics .....	4
PHY 241 General University Physics Laboratory .....	1
CHE 230 Organic Chemistry I .....	3
CHE 231 Organic Chemistry Laboratory I .....	2
<b>Second Semester</b>	
CME 320 Engineering Thermodynamics .....	4
CHE 232 Organic Chemistry II .....	3
CME 220 Computational Tools in Chemical Engineering .....	3
MA 214 Calculus IV .....	3
PHY 232 General University Physics .....	4

### Junior Year

First Semester	Hours
CME 415 Separation Processes .....	3
CME 471 Seminar .....	1
CHE 446G Physical Chemistry for Engineers .....	3
CME 330 Fluid Mechanics .....	3
Technical Elective*** .....	3
ENG 2XX Writing Intensive Course .....	3

### Second Semester

CME 006 The Engineering Profession (Junior and Senior) .....	0
CME 420 Process Modeling in Chemical Engineering .....	3
CME 425 Heat and Mass Transfer .....	4
CME 432 Chemical Engineering Laboratory I .....	2
CHE Elective† .....	3
University Studies* .....	6

### Senior Year

First Semester	Hours
CME 006 The Engineering Profession (Junior and Senior) .....	0
CME 470 Professionalism, Ethics and Safety .....	1
CME 433 Chemical Engineering Laboratory II .....	3
CME 455 Chemical Engineering Process Design I .....	3
CME 550 Chemical Reactor Design .....	3
Supportive Elective** .....	3
CME Elective†† .....	3

### Second Semester

CME 006 The Engineering Profession (Junior and Senior) .....	0
CME 456 Chemical Engineering Process Design II .....	4
CME 462 Process Control .....	3
University Studies* .....	3
CME Elective†† .....	3
Bio Elective or Materials Elective††† .....	3

\*Selected from University Studies areas in Social Science (6 credits), Humanities (6 credits), Cross-Cultural (3 credits) and Electives (3 credits/one-half the requirement) in consultation with the academic advisor to assure ABET depth and breadth requirements.

\*\*Supportive elective is to be chosen from any University course, excluding a more elementary version of a required course, such as precalculus mathematics or PHY 211.

\*\*\*Technical elective (must be a 3 or more credit hour course) and may be selected from the following: CME 395, 404G, 505, 515, 554, 580; CHE 226 and all above 441; CS 320 and above; MA 321, 322, 416G, 432G, 433G, 471G, 481G; PHY any above 241; STA 381 and higher; BCH 401G, 501; MSE 401G, 402G, 403G, 550; any BIO 150 and above course; any engineering course above that required, e.g. above ME 330.

†CHE elective (must total 3 credits): CHE 226 and above (if not taken as technical elective).

††CME Electives: Courses recommended as Chemical Engineering electives are listed below. Other courses will be considered, each on its individual merit.

- CME 395 Special Problems in Chemical Engineering
- CME 404G Polymeric Materials
- CME 505 Analysis of Chemical Engineering Problems
- CME 515 Air Pollution Control
- CME 554 Chemical and Physical Processing of Polymer Systems
- CME 580 Design of Rate and Equilibrium Processes for Water Pollution Control
- CME 599 Topics in Chemical Engineering

†††Bio or Materials Elective (must total 3 credits)