THE UNIVERSITY OF MAINE

Chemical Engineering

Bachelor of Science Degree

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Admission Requirements
(In years as established by the college)
A high school diploma with the following specific courses:

4 English
1 Biology (recommended)
2 Algebra I & II
1 Geometry
1 Pre-Calculus
2 Lab Science (chemistry and physics)
2 History/Social Studies
Academic electives (to equal at least 17 total credits)

To ensure current mathematical skills, students should take a mathematics course during their senior year of high school.

Did You Know?
Faculty are student-centric and make a special effort to assist undergraduates in their understanding of course material. Our faculty have a breadth of interests that translates to many different learning opportunities and experiences for students in and out of the classroom.

College of Engineering

Program Description

Our programs offer a basic and applied process engineering and design course sequence rather than some specializations that other New England programs have. Our Bachelor of Science graduates could enter several different types of industries with the broad-based engineering education we provide. This is evidenced based on where our graduates place, both with industry and graduate programs. Our students know the practical aspects of process engineering (e.g., what a pump is, how to operate heat exchangers) and can do appropriate engineering design calculations — a very practical approach.

Specialized Information

We offer cooperative opportunities in which students can do a two-semester co-op and still graduate in the typical four-year sequence. There are various opportunities for working in research labs alongside faculty and graduate students, as well as in applied engineering testing and evaluation (PDC).

Associated Honor Societies and Student Organizations

Biological engineering students participate in AIChE and are on the Chem-E Car team, one of several UMaine student groups that compete regionally and nationally. Among the conferences they attend is the annual Pittcon Analytical Chemistry Conference. Working with faculty member Michael Mason, some of our students have participated in NASA's Microgravity University at the Johnson Space Center in Houston, Texas. UMaine also has chapters of the Society of Women Engineers and Tau Beta Pi, the national engineering honor society.

NEBHE Program

Applicants to this program who reside in Vermont are eligible for reduced tuition (in-state plus 50 percent) under the New England Regional Student Program, administered through the New England Board of Higher Education (nebhe.org).

UMaine Graduate Programs

Master of Science in Biological Engineering
Master of Science in Chemical Engineering
Doctor of Philosophy in Chemical Engineering

Representative Courses

CHB 111 Introduction to Chemical and Biological Engineering
CHB 112 Introduction to Chemical and Biological Engineering II
CHB 200 Fundamentals of Process Engineering
CHB 350 Statistical Process Control and Analysis
CHB 460 Biochemical Engineering
CHB 477 Biological Engineering Design
CHB 493 Chemical and Biological Engineering Seminar
CHB 479 Biological Engineering Design II
CHB 493 Chemical and Biological Engineering Seminar II
CHE 352 Process Control
CHE 360 Elements of Chemical Engineering
CHE 361 Chemical Engineering Laboratory I
CHE 362 Elements of Chemical Engineering II
CHE 363 Chemical Engineering Laboratory II
CHE 368 Kinetics and Reactor Design
CHE 385 Chemical Engineering Thermodynamics I
CHE 386 Chemical Engineering Thermodynamics II
CHE 477 Elements of Chemical Process Design
CHE 478 Analysis, Simulation and Synthesis of Chemical Processes
CHE 479 Process Design Projects

Career and Graduate Opportunities

Typical activities and duties for chemical engineering graduates are:

Process Engineering — developing methods of reducing raw materials use, investigating process modifications to reduce energy consumption, reducing pollution and environmental impacts, supervising production workers and maintaining a process, showing paper mills how to use chemicals efficiently, and exploring new paper coating/paint formulations to achieve improved properties.

Equipment Design/Modification — troubleshooting equipment and processes to resolve malfunctions, exploring the effects of modifying process equipment, helping customers learn to use machinery more efficiently, developing testing equipment, designing machinery to separate recyclable materials from waste, and designing and starting up pollution control equipment.

Technical Sales and Service — helping manufacturers solve specialized technical problems, showing customers better ways to use new and existing chemicals, and sales of new technical systems and equipment.

Process Control — providing improved control to enhance product uniformity, controlling processes to reduce pollution emissions, controlling processes to optimize raw material and energy use, and starting up and teaching operators to use computer process controls.

Product Development — evaluating materials to reduce foam or microbiological growth, modifying paper coating composition to provide improved printing, creating or modifying computer software to improve process control, and developing new products to meet customer demands.

Recent graduates have gone on to professional schools — medical, dental, law and pharmacy — or have been hired by the following companies:

Process Engineering: (pulp and paper industry) — Fraser Papers, Garden State Paper Co., International Paper, Mead Corp., P.H. Glatfelter Co., Sappi Fine Paper and Westvaco Corp.

(Other Process Industries) — DuPont, Pioneer Plastics, Proctor and Gamble, National Semiconductor, Toray Plastics, and Teradyne Corp.

Sales/Technical Service: Air Liquide, Buckman Labs, Hercules and Nalco Chemical.

Engineering/Process Design: Black Consulting Group, Arthur D. Little Inc., ABB Process Automation, Foxboro, Simons Engineering, and I and C Systems Control.

Equipment Manufacturers: Honeywell-Measurex and Ingersoll Rand.

Environmental: Maine Department of Environmental Protection and ABB Environmental Corp.

Consulting: Woodard and Curran.

About UMaine

The University of Maine, founded in Orono in 1865, is the state's premier public university. It is among the most comprehensive higher education institutions in the Northeast and attracts students from across the U.S. and more than 60 countries. It currently enrolls 12,000 total undergraduate and graduate students who can directly participate in groundbreaking research working with world-class scholars. Students are offered 88 bachelor's degree programs, 64 master's degree programs, 25 doctoral programs and one of the oldest and most prestigious honors programs in the U.S. The university promotes environmental stewardship on its campus, with substantial efforts aimed at conserving energy, recycling and adhering to green building standards in new construction. For more information about UMaine, go online (umaine.edu). Equal opportunity information also is available online (umaine.edu/eo).

How do I apply?

Visit go.umaine.edu for an application as well as information about academics and life at UMaine.

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Academic Programs 2011–12

The latest versions of the UMaine fact sheets are online (factsheets.umaine.edu).
This fact sheet is intended for informational purposes only and is subject to change.