

CHEMICAL ENGINEERING MAJOR: ENVIRONMENTAL ENGINEERING OPTION (B.S.)

<https://ceps.unh.edu/chemical-bioengineering/program/bsche/chemical-engineering-major-environmental-engineering-option>

Description

The chemical engineering program, with its substantial requirements in chemistry, fluid dynamics, heat transfer, mass transfer, unit operations, and reaction kinetics, provides students with a unique preparation to deal with many aspects of environmental pollution problems. The option gives students a special focus on the application of chemical engineering principles and processes to the solution of problems relating to air pollution, water pollution, and the disposal of solid and hazardous waste. Three required courses must be selected, plus one elective from the electives list. Each course must carry a minimum of three credits. Students interested in the environmental engineering option should declare their intention to the department faculty during the sophomore year.

The Chemical Engineering program (B Sci in Chemical Engineering) is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the General Criteria and the Program Criteria for Chemical, Biochemical, Biomolecular and Similarly Named Engineering Programs.

Requirements

Degree Requirements

Minimum Credit Requirement: 132 credits

Minimum Residency Requirement: 32 credits must be taken at UNH

Minimum GPA: 2.0 required for conferral*

Core Curriculum Required: Discovery & Writing Program Requirements

Foreign Language Requirement: No

All Major, Option and Elective Requirements as indicated.

*Major GPA requirements as indicated.

Major Requirements

Code	Title	Credits
Required Courses		
CHBE 400	Chemical and Bioengineering Lectures	1
CHBE 501	Material Balances	3
CHBE 502	Energy Balances	3
CHBE 601	Fluid Mechanics and Unit Operations	3
CHBE 602	Heat Transfer and Unit Operations	3
CHBE 603	Applied Mathematics for Chemical Engineers	4
CHBE 604	Chemical Engineering Thermodynamics	3
CHBE 612	Chemical Engineering Laboratory I	3
CHBE 614	Separation Processes	3
CHBE 703	Mass Transfer and Stagewise Operations	3
CHBE 707	Chemical Engineering Kinetics	3
CHBE 708	Chemical Engineering Design	4

CHBE 709	Fundamentals of Air Pollution and Its Control	4
CHBE 713	Chemical Engineering Laboratory II	3
CHBE 752	Process Dynamics and Control	4
CHEM 405	Chemical Principles for Engineers	4
CHEM 683	Physical Chemistry I	3
CHEM 684	Physical Chemistry II	3
CHEM 685	Physical Chemistry Laboratory	2
CHEM 686	Physical Chemistry Laboratory	2
CHEM 651	Organic Chemistry I	3
CHEM 652A	Organic Chemistry II	3
CHEM 653	Organic Chemistry Laboratory	2
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 527	Differential Equations with Linear Algebra	4
MATH 644	Statistics for Engineers and Scientists	4
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
CEE 720	Solid and Hazardous Waste Engineering	3
ESCI 654	Fate and Transport in the Environment	4
Elective Courses		
Select one of the following:		3-4
CHBE 695	Chemical Engineering Project	
CHBE 696	Independent Study	
CHBE 744	Corrosion	
CEE 723	Environmental Water Chemistry	
CEE 724	Environmental Engineering Microbiology	
Total Credits		103-104

Student Learning Outcomes

By the time of graduation, students will have

- an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- an ability to communicate effectively with a range of audiences.
- an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.