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

https://ceps.unh.edu/chemical-engineering/energy-option

Description

This option covers the major areas of current interest in the energy field. The required courses provide students with a general background knowledge of fossil fuels, nuclear power, solar energy, and other alternative energy resources. The elective courses will permit the student to study topics of special interest in more depth or gain a broader perspective on energy and some closely related subjects. Three courses are required, and a minimum of two additional courses of at least three credits each should be selected from the electives list. Students interested in the energy option should declare their intention to the department faculty during the sophomore year.

Requirements

Code	Title	Credits
Required Courses		
CHE 400	Chemical Engineering Lectures	1
CHE 501	Introduction to Chemical Engineering I	3
CHE 502	Introduction to Chemical Engineering II	3
CHE 601	Fluid Mechanics and Unit Operations	3
CHE 602	Heat Transfer and Unit Operations	3
CHE 603	Applied Mathematics for Chemical Engineers	4
CHE 604	Chemical Engineering Thermodynamics	3
CHE 612	Chemical Engineering Laboratory I	3
CHE 614	Separation Processes	3
CHE 703	Mass Transfer and Stagewise Operations	3
CHE 707	Chemical Engineering Kinetics	3
CHE 708	Chemical Engineering Design	4
CHE 713	Chemical Engineering Laboratory II	3
CHE 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 653	Organic Chemistry Laboratory	2
CHEM 652A	Organic Chemistry II	3
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
CHE 705	Fossil Fuels and Renewable Energy Sources	4
CHE 706	Electrochemical Methods for Energy Applications	4
CHE 712	Introduction to Nuclear Engineering	4
Elective Courses		
Select one of the following:		3-4
CHE 695	Chemical Engineering Project	
CHE 696	Independent Study	
CHE 761	Biochemical Engineering	
ME 705	Thermal System Analysis and Design	
Special Topics on Energy [1]		
Total Credits		**104-105**

[1] This requires approval of the department; students should check with their advisor. Courses offered in the past include Renewable Electrical Power, Renewable Energy, and Peak Oil.

Student Learning Outcomes

- The ability to apply knowledge of mathematics, science and engineering.
- The ability to design and conduct experiments safely, as well as to analyze and interpret data.
- The ability to identify, formulate and solve chemical engineering problems.
- The ability to design a process that meets desired specifications with consideration of environmental, safety, economic and ethical criteria.
- An appreciation of contemporary issues relevant to chemical engineering.
- Completed the UNH general education/Discovery program and obtained a broad education useful to understand the impact of engineering solutions in a global and societal context.
- The ability to use computers effectively for engineering practice.
- An appreciation of professional and ethical responsibility.
- The ability to communicate effectively.
- Skills to search for information in the library and on the internet. These skills will be used in their pursuit of lifelong learning.
- The capacity of function and work effectively alone and in a team environment.