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

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

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Required Courses</td>
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<tr>
<td>CHE 400</td>
<td>Chemical Engineering Lectures</td>
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<tr>
<td>CHE 501</td>
<td>Introduction to Chemical Engineering I</td>
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<td>CHE 502</td>
<td>Introduction to Chemical Engineering II</td>
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<tr>
<td>CHE 601</td>
<td>Fluid Mechanics and Unit Operations</td>
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<td>CHE 602</td>
<td>Heat Transfer and Unit Operations</td>
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<tr>
<td>CHE 603</td>
<td>Applied Mathematics for Chemical Engineers</td>
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<td>CHE 604</td>
<td>Chemical Engineering Thermodynamics</td>
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<td>CHE 612</td>
<td>Chemical Engineering Laboratory I</td>
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<td>CHE 614</td>
<td>Separation Processes</td>
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<td>CHE 703</td>
<td>Mass Transfer and Stagewise Operations</td>
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<td>CHE 707</td>
<td>Chemical Engineering Kinetics</td>
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<td>CHE 708</td>
<td>Chemical Engineering Design</td>
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<td>CHE 713</td>
<td>Chemical Engineering Laboratory II</td>
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<tr>
<td>CHE 752</td>
<td>Process Dynamics and Control</td>
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<td>CHEM 405</td>
<td>Chemical Principles for Engineers</td>
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<td>CHEM 683</td>
<td>Physical Chemistry I</td>
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<td>CHEM 684</td>
<td>Physical Chemistry II</td>
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<td>Physical Chemistry Laboratory</td>
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<td>Organic Chemistry I</td>
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<td>Organic Chemistry Laboratory</td>
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<td>CHEM 652A</td>
<td>Organic Chemistry II</td>
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<tr>
<td>MATH 426</td>
<td>Calculus II</td>
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<td>MATH 527</td>
<td>Differential Equations with Linear Algebra</td>
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<td>MATH 644</td>
<td>Statistics for Engineers and Scientists</td>
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<td>PHYS 407</td>
<td>General Physics I</td>
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<tr>
<td>PHYS 408</td>
<td>General Physics II</td>
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<td>CHE 705</td>
<td>Fossil Fuels and Renewable Energy Sources</td>
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<td>CHE 706</td>
<td>Electrochemical Methods for Energy Applications</td>
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<td>CHE 712</td>
<td>Introduction to Nuclear Engineering</td>
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<td>Elective Courses</td>
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<tr>
<td>CHE 605</td>
<td>Chemical Engineering Project</td>
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<td>CHE 696</td>
<td>Independent Study</td>
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<tr>
<td>CHE 761</td>
<td>Biochemical Engineering</td>
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<tr>
<td>ME 705</td>
<td>Thermal System Analysis and Design</td>
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Special Topics on Energy

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.

University of New Hampshire