

# Chemical Engineering

## *Elective Focus Area*

# Energy & Environment

**General Education Components (15 semester hours)** – students in the Energy and Environment EFA can take any courses they like to fulfill the College of Engineering General Education Component (GEC) requirement. See supplemental information on recommendations for GEC classes related to the EFA.

### **Statistics Elective (3 semester hours)**

*(Recommended: 22S:039)*

22S:039	Probability and Statistics for Engineering and Physical Sciences	3 s.h.
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### **Required Engineering Elective (3 semester hours)**

052:237	Green Chemical and Energy Technologies (formerly Green Chemical Engineering)	3 s.h.
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### **Advanced Chemistry Electives (9 or 10 semester hours)**

*(Choose the Analytical, Physical, or Biochemical sequence)*

	Advanced Chemistry Course	3 s.h.
	Advanced Chemistry Course	3 s.h.
	Advanced Chemistry Lab	3 or 4 s.h.

### **Free Electives (12 or 11 semester hours from the following list)**

Choose at least 3 s.h. from the [Engineering](#) course list and 3 s.h. from the [Science](#) course list.

The following courses are pre-approved for the EFA. Others courses may be substituted with appropriate justification – see supplemental information for (1) strategies for identifying other free electives and (2) how to learn more from CBE students and alumni about these courses.

#### **Engineering Electives**

052:108	Introduction to Biochemical Engineering	3 s.h.
052:231	Environmental Chemistry I	3 s.h.
052:235	Air Pollution Control Technology	3 s.h.
052:236	Atmospheric Chemistry and Physics	3 s.h.
053:107	Sustainable Systems	3 s.h.
053:154	Environmental Microbiology	3 s.h.
058:048	Energy Systems Design	4 s.h.
058:148	Combustion and Propulsion	3 s.h.
058:147	Fuel Cells	3 s.h.
(100-level or higher)	Other Advanced Engineering courses	

#### **Science Electives**

002:010	Principles of Biology I	4 s.h.
002:011	Principles of Biology II	4 s.h.
004:173	Atmospheric and Environmental Chemistry	3 s.h.
012:114	Energy and the Environment	3 s.h.
012:158	Biogeochemical Cycles and Modeling	3 s.h.
044:101	Climatology	3 s.h.
044:105	Introduction to Environmental Remote Sensing	3 s.h.
044:110	GIS for Environmental Studies	3 s.h.
175:197	Environmental Health	3 s.h.
175:221	Aerosol Technology	3 s.h.
175:230	Occupational Health	3 s.h.
(100-level or higher)	Advanced Geosciences, Chemistry, Geography courses	

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### *Supplemental Information*

## Energy & Environment

*The following information is supplemental information that may be helpful to students in the Energy and Environment EFA*

*Tips for finding GEC courses related to energy and environment:*

- **Consider the following courses**

06E:133	Environmental Economics * (Economics Department)	3 s.h.
	* Pre-req. 06E:001 & 002 or only one with consent of instructor	
152:150	Global health Seminar (Global Health Studies Dept).	2 s.h.
044:125	Environmental Impact Analysis (Geography Dept.)	3 s.h.
- **Check the following departments** *Geography (044), Global Health Studies (152), History (016), and Religion (032)*
- **Do an ISIS keyword search:** *recommended search terms include “enviro” (captures environment and environmental), “energy”, “green”, “fuel”, “climate”, “global”, “sustain” (captures sustainable and sustainability), “natural” and “ecology”.*

**Tips for finding additional free electives that might be appropriate within this EFA:** The list on the previous page is the pre-approved list of courses. We often approve substitute courses appropriate to the student career interests.

- **Check the following departments** *Geography (044), Geosciences (012), Occupational and Environmental Health (175), and all of the Engineering Departments.*
- **Do an ISIS keyword search:** *see search terms above*

**To get more information on free electives:**

- The Department maintains a list of (1) CBE students and recent graduates in the Energy and Environment EFA, and (2) a list of free electives selected by these students. Many of these students would be happy to talk or email about the choice of the Energy and Environment EFA free electives. Contact the departmental secretary for contact information.