

Env Sci 203/ Civ Env 203
Energy and the Environment
Lectures: Tu-Th 2:00 – 3:20 pm, Tech L221
Discussion section: Th 9:30- 10:50 am, Abbott Auditorium, Pancoe
Canvas website: <https://canvas.northwestern.edu>

Instructor: Neal Blair
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Office Hours: by appointment

Course description: We are faced with major global challenges involving the sustainable use of resources and stewardship of the environment. These include sustainable energy production and its impacts on other resources. This course will be an introduction to this topic, focusing on the science behind it and approaches to engineering relevant solutions.

Prerequisites: CHEM 103, MATH 224

Teaching method: Lectures, demonstrations, and discussions

Readings: Posted on Canvas or retrieved from library

Evaluation methods

Progress in the course will be monitored by a series of problem sets, class activities and exams. The grades will be weighted in the following manner:

Homework assignments	40%
Class participation	20%
Exams (2)	40%

Final letter grade assignments for course

A = 94-100, A- = 90-93

B+ = 87-89, B = 84-86, B- = 80-83

C+ = 74-79, C = 68-73; C- = 60-67

D = 50-59

F < 50

Late assignments will not be accepted without prior approval from the professor or teaching assistant.

Tentative Schedule

As with the environment, schedule may be changed as a result of weather or other factors

Lectures: Note there will be in-lecture activities for grade. Prior notice of timing will not be given thus attendance is highly recommended. Make-up assignments will be provided only if prior notice of expected absence is provided to instructor before lecture.

Bring paper, a writing utensil (preferably a pencil), and a scientific calculator or equivalent (e.g. laptop with Excel) to class. These will be needed for in-class problem solving.

Date	Topic
9/19	Introduction
9/21	Population impacts
9/26	Conventional fossil fuels
9/28	Conventional fossil fuels
10/3	TBD
10/5	TBD
10/10	Unconventional fossil fuels
10/12	Fossil fuel environmental impacts I
10/17	Fossil fuel environmental impacts II
10/19	Fossil fuel environmental impacts III
10/24	Exam
10/26	Biodiesel
10/31	Anaerobic processes and fermentation
11/2	Biogas (methane)
11/7	Bioethanol
11/9	Biofuel environmental impacts I
11/14	Biofuel environmental impacts II
11/16	Biofuel environmental impacts III/ Biofuel ethics
11/21	Exam
11/27	WCAS Reading Period begins- No class

Course goals

By the end of the course the students should be able to:

1. Research information in the scientific peer reviewed literature
2. Assemble and synthesize information to answer research questions
3. Clearly communication information in written formats
4. Identify the major environmental issues associated with energy use
5. Identify and describe engineering solutions to environment issues
6. Perform fundamental physical-chemical calculations that constrain the energy-environment system

Collaborations and Academic Ethics

Discussion is encouraged between class participants however assignments turned in for grades should be the work of the individual. Sources of information for all work should be carefully cited. Violations of the principles of academic integrity can result in severe penalties, including expulsion from the University. All students should review College guidelines on [Academic Integrity](#).

Disability Accommodations

Any student with a documented disability needing accommodations is requested to speak directly to the Office of Services for Students with Disabilities (SSD) (847-467-5530) and the instructor as early as possible in the quarter (preferably within the first two weeks of class). All discussions will remain confidential.