



CBE 40498 – Climate and Energy

Fall 2009

Everything you need to know about the class (policies, grading, homework formats, etc.)

Instructor: Jessica Anderson Kuczenski
Office: 309 Cushing, Phone: 1-3661, email: janders8@nd.edu

Textbook: *No textbook*, but will have required readings several times a week

Supplementary: *Energy Systems Engineering; Vanek, Albright 2008*

Software: MS Office (Word, Excel, Powerpoint), adobe reader

Required Class Periods: MW, 1:30-2:45 pm in 310 DBRT

Office Hours: TBA

Graders: K. Waite

Course goals:

By the end of the course, you should be able to:

- Understand the magnitude of world energy needs
- Quantify the link between energy use and climate
- Analyze power cycles and calculate efficiencies
- Identify pros, cons and challenges of non-CO₂-producing energy sources
- Learn the science underlying the fundamental factors that control the climate
- Develop an understanding of the techniques used for research on climate change
- Gain a level of familiarity with the climate change literature
- Develop a personal view of global warming and understand what could be done to reduce the extent of environmental impact

Reading Assignments/Responses

For each class period there will be a reading assignment (or film assignment) that corresponds to the material to be covered in the next class period. I expect that you will be prepared for each class; this means that you will have read the assigned reading(s) (or watched the assigned film) before class, written a brief response of your opinions on that reading (or film), and that you are ready to discuss the topic being covered that day. You are accountable for all the material assigned to you, but only a portion of this material will be explicitly covered in class. Your responses will be turned in at the end of the class discussion.

The responses are meant to be your personal response to the reading (or film). State your feelings, thoughts, reactions, and questions about policies, ideas, actions, settings, and any other elements in the articles. You can't be wrong in your responses, so take risks and be honest. Write about what you like and dislike, what seems confusing or unusual to you. Tell what you think something means. Make predictions about what might happen later. The responses can vary in length from a few good paragraphs to 2 pages of text, double-spaced. If you use any additional sources to build your point, please use footnote citations. This is not a grammar class; however, you must make yourself understood. If your writing is full of mistakes, it will be difficult to understand and you will receive a lower grade.

Homework

Homework, when assigned, will be due at the *start* of class on the date due. *No late homework will be accepted*, so it is to your advantage to turn in an incomplete assignment rather than none at all. You may turn in the assignment electronically through Concourse or on paper; in either event, please ensure the homework is only in one format, i.e. if you turn in the homework electronically, you should not turn in any portion of the assignment on paper. If you are unable to attend class on the day homework is due, you should arrange to have the assignment turned in to the instructor prior to class or turn the assignment in via Concourse.

Projects

The main contributions to your grade in this class are several research projects on an assigned topic or topic of your choice pertaining to climate and/or energy. The projects will be completed in teams of two (or in a group of three, if odd numbers exist). You will assemble your own project teams, but I am hopeful that group memberships will change during the course of the semester to gain a better understanding of the different strengths of all students. At the end of the semester, the project on a renewable energy topic of your choice will also feature an oral report. I will give guidelines as needed for report writing.

Grades	%
Reading responses	20
Homework	20
Class participation	10
Final project (oral)	15
Projects (written)	<u>35</u>
Total	100

Participation

You are expected to fully participate in the class discussions, pay attention to the lectures, and answer questions. A written excuse must be provided for missing class and you should notify the instructor beforehand if possible. Working on unrelated materials during class, such as preparing for an exam, finishing homework for another course, or working on the daily crossword is not allowed.

Honor Code

I expect all students will follow the ND academic honor code. The honor code expects its students to be responsible adults and to behave at all times with honor and integrity. All students are expected to abide by this code and to aid its enforcement by reporting violations of it. All students are responsible for their own ethical behavior. "As a member of the Notre Dame community, I will not participate in or tolerate academic dishonesty."

In addition, I expect that the work you turn in for grade is your own (or your teams), and that your actions demonstrate respect for yourself, your classmates, and your instructor. Responses are to be completed only by you. I do encourage you to freely discuss homework assignments amongst your classmates as you formulate your *individual* solutions. Your written work should reflect *your* understanding of the problem solution. If you have questions about this document or any aspect of the class, please see me!

If you have questions about this document or any aspect of the class, please see me! I look forward to getting to know each of you and towards a productive semester! ☺

Proposed course calendar

Please note that all subjects and topics are subject to change!

Week	Monday	Wednesday	Friday
1		8/26/2009	
		Overview	
2	8/31/2009	9/2/2009	
	Introduction	Coal	
3	9/7/2009	9/9/2009	9/11/2009
	Power Cycles	IGCC	ND Power Plant Tour
4	9/14/2009	9/16/2009	
	Oil/NG	Unconventional Fossil Fuels	
5	9/21/2009	9/23/2009	
	Earth Carbon Cycle	Carbon capture/ sequestration	
6	9/28/2009	9/30/2009	10/2/2009
	Carbon capture/ sequestration	Nuclear Energy	Cook Nuclear Plant Tour
7	10/5/2009	10/7/2009	
	Nuclear Energy	Hydrogen	
8	10/12/2009	10/14/2009	
	Earth Energy Balance	Climate modeling	
	10/19/2009	10/21/2009	
Fall Break			
9	10/26/2009	10/28/2009	
	Climate modeling	Climate modeling	
10	11/2/2009	11/4/2009	
	Wind	Solar	
11	11/9/2009	11/11/2009	11/13/2009
	Solar	Biomass	Ethanol Plant Tour
12	11/16/2009	11/18/2009	
	Biomass	Tide/Wave	
13	11/23/2009	11/25/2009	
	Hydroelectricity	Thanksgiving break	
14	11/30/2009	12/2/2009	
	Geothermal		
15	12/7/2009	12/9/2009	12/11/2009
	Oral Presentations	Oral Presentations	Final Reports Due
	12/14/2009	12/16/2009	
Finals Week			