

Energy and Society - 11:374:175
Fall 2014: Mondays & Thursday 11:10-12:05pm, CDL 103

Lecture on Mondays and Thursdays
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Recitation on Tuesdays
Section 1, 9:30-10:25 (Hickman 201)
Section 2, 11:10-12:05 (Food Science 109)

Our lives, homes, workplaces, and whole societies are highly dependent upon a constant flow of energy – we can barely imagine an hour without the use of electricity, natural gas, or gasoline. The amount of energy we use and how it is produced has major impacts on the health of our environment, our economy, and local, national, and international politics. The problems, such as climate change, posed by our current human-energy system highlights the need for us to find new ways of living. But how do we change our energy system? To begin to answer this question, we must realize the extent that our lives are integrated with energy production and consumption. Only then can we realize that changing our energy system is not just an engineering or physics problem, but also a social and political problem that requires societal changes. The **learning objectives of this class** are to:

- Identify and describe how societies' historical relationships with energy have shaped the development of nations, economies, and environments across space and time (Areas of inquiry: Social and Historical Analysis – h Understand the bases and development of human and societal endeavors across time and place).
- Analyze the current U.S. and global energy production and consumption systems and their environmental, economic, political and social impacts at various scales. (Areas of inquiry: Social and Historical Analysis – h Understand the bases and development of human and societal endeavors across time and place).
- Apply the different models of decision-making that explain why individual, household, business organizations, and governments make the decisions they do about energy consumption and production. (21st Century Challenges b. Analyze a contemporary global issue from a multidisciplinary perspective).
- Identify the appropriate analytical tool and approaches for analyzing energy technologies and changing individual, household, business, and governmental decisions about energy production and consumption (21st Century Challenges c. Analyze the relationship that science and technology have to a contemporary social issue).

SAS Core Curriculum Learning Goals

I: 21st Century Challenges

- b. Analyze a contemporary global issue from a multidisciplinary perspective.
- c. Analyze the relationship that science and technology have to a contemporary social issue.

II: Areas of Inquiry : Social and Historical Analysis

- h. Understand the bases and development of human and societal endeavors across time and place.



Unit One: Understanding why businesses, governments, and people make the energy choices they make



Unit Two: Understanding the far-reaching consequences of these energy choices



Unit Three: Tools for Analyzing Energy Choices



Unit Four: Tools for Changing Energy Choices

The Rules

<http://academicintegrity.rutgers.edu/integrity.shtml>

1. No plagiarism.
2. No cheating.
3. LATE ASSIGNMENTS WILL LOSE HALF A GRADE FOR EACH CALENDAR DAY LATE. If your paper is a 3.0 then it will be marked as a 2.5 for a day late, a 2.0 for 2 days late. **If you must miss a deadline due to illness or emergency, notify all of us via email on or before the due date.**
4. THERE IS NO EXTRA CREDIT. There will be not additional assignments or revised work for re-grading. Instead, be prepared for tests and quizzes and we are happy to review drafts of your work and answer questions before it is due.
5. IF YOU CONTEST A GRADE, you must do it in writing to the grader. Write your argument presenting evidence supporting a grade change and attach your original work with our grading on it.

How Will We Learn About Energy & Society?

In this class, we will learn about the relationships between energy and society by engaging with readings, lecture materials, films, active discussions, periodic class assignments and a semester long experimental project to improve your understanding of our current human-energy system and how we can change it. This class is a 100 level class and is meant to be an accessible introduction to human-energy systems. However, it will require a reasonable commitment of your time to complete the readings and assignments thoroughly. Some weeks readings will be easier than others – use the reading guides supplied to make sure you are understanding the key concepts. Lectures and recitations will follow-up and reinforce these key concepts by introducing different examples and case studies. All required readings will be posted at <https://sakai.rutgers.edu/portal>.

In the first half of the class, we will learn about the current human-energy system and the individual, household, organizational, and institutional decisions that constitute the human-energy system. We'll learn about the competing theories to explain why we make the energy decisions we do and the extensive impacts of those decisions. In the second half of the class, we will learn and apply the tools needed for analyzing and changing our human-energy system at multiple levels. The ultimate

objective of these sections is for you to be able to demonstrate a competent well-developed understanding of our current human-energy system, its impacts, and energy decision-making on 2 quizzes, a mid-term, and final exam.

How Will You Be Evaluated?

Your grade will be based upon several different kinds of assessments of your knowledge of and ability to apply class lessons.

<u>Assignments</u>	
In-lecture Assignments	20%
Mid-term	20%
Final Exam	25%
Recitation	10%
Energy Analyses	25%

Daily Reflections on Reading/Lecture Readings and Class Participation (20%): You will be asked a question sometime during class to reflect on for a few minutes. This in addition to any exercises/discussions will be used to provide an assessment of your participation in class.

Mid-Term Exam (20%): Questions will be 10 multiple choice (1 point each) and 5 short answers (2 points each). Your mid-term exam will cover all topics/questions identified in your reading and lecture guides posted on sakai for each class.

Final Exam (25%): You will have a final exam on December 22nd at 9:30 that will cover class material from 10/19 – 12/10. Questions will be 15 multiple choice (1 point each) and 5 short answers (2 points each). Your final exam will cover all topics/questions identified in your reading and lecture guides posted on sakai for each class. The answers to these guides are found in readings, lectures, and films from class.

Recitation (10%): Recitation is a great chance to discuss what you have read and learned in lecture in a small class and this is where lots of students do their learning. In recitation you will see movies that emphasize points from the readings, debate current events related to energy, and apply what you are learning to investigate the world around you. To receive credit for recitation students **MAY NOT MISS MORE THAN THREE RECITATIONS** (no excuses please – that is why we give you three). More than three absences during the semester will result in losing 10 points from your recitation grade (effectively lowering your class one whole grade).

Recitation Schedule:

9/2	Introductions to each other, to the class
9/9	Who Killed the Electric Car (First Half)
9/16	Who Killed the Electric Car (Second Half)
9/23	Energy Analysis 1 Due: What does student energy use look like? How does it vary? / Review of lecture and class questions
9/30	Current Events Article: Class Debate
10/7	Energy Analysis 2 Due: What does the energy use of others look like? / Review of lecture and class questions
10/14	NO RECITATION
10/21	Review for Mid-Term Exam
10/28	Crude (First Half)
11/4	Crude (Second Half)
11/11	Energy Analysis 3: Comparing Footprint Calculators & Doing Analysis of Results

11/18	Current Events Article: Class Debate
11/25	Thanksgiving Schedule – Class Lecture
12/2	Final Review
12/9	No recitation : Final Energy Analysis due December 12. Final Analysis Due to Human Ecology Main office in Cook Office Building – Hard Copy by 5 pm

Energy Analyses (25%)

As part of your grade, you will be conducting some energy analyses. This will break down into 4 different assignments throughout the semester. These assignments need to be uploaded into the morning of your recitation (it will be a topic of discussion for your recitation so it needs to be completed before then). Full instructions for each analysis will be posted in the energy analysis section on sakai and will tell you exactly what you need to do to get full points. Below are brief summaries of these assignments:

Energy Analysis 1: (4 points) Conduct a carbon footprint inventory for yourself over the past twelve months using <http://www.carbonfootprint.com>. Choose the log-in/register option. Enter your email and create account. It will send you a password. Select personal calculator. You may need to consult with Rutgers data on dorm energy use or talk to your parents about your energy bill. Fill in the xcel sheet that reflects your personal calculator input (provided on sakai assignment site). Submit this with a paragraph summarizing what the calculator told you about your energy use.

Energy analysis 2 (4 points) You will need to recruit a willing participant who is not a student (parents if you don't live with them, grandparents, non-student friend, professor, random person of the street) for a 20 minute interview. You will then fill out the same data points in the calculator that you did for your analysis in the on-line calculator. Submit xcel sheet and a paragraph that summarizes who the person you selected was and how their carbon footprint is different from you.

Energy analysis 3 (4 points): In this assignment you will need to identify two alternative carbon calculators to the ones we have used. Once you have done this, you should do the calculations for yourself in the other two. Write a paragraph or two summarizing the differences. Is your carbon footprint different? What are some similarities and differences between the footprint calculators?

Energy analysis 4 (13 points): In this assignment you will write a memo three pages long. In it you will identify three problems with the U.S. energy system and the goals and criteria by which you will assess improvement. You will cite sources. You will then make three recommendations for policies or efforts to achieve these goals with a brief analysis of how they measure up to your criteria. Final Analysis Due to Human Ecology Main office in Cook Office Building – Hard Copy by 5 pm

DATE	ASSIGNED READINGS	READING/LECTURE TOPIC
Thursday 9/4	Syllabus Class Guide	<u>Why Energy and Society: Why is it important to understand our relationships with energy? What is the case for transforming our energy system?</u>
Monday 9/8	Sieferle, R.P. 1990. "The Energy System – A Basic Concept of Environmental History" in The Silent Countdown – Essays in European Environmental History	<u>The Basics: What is an energy system? Where do humans fit in? What is a human-energy system?</u>
Thursday 9/11	Chow, J., Kopp, R.J., & Portney, P. 2003. "Energy Resources & Global Development" Science 302:1528-1531. Recitation Movie: Who Killed the Electric Car?(First half)	<u>A Global View: How are U.S. Energy Choices Different than the Rest of the World?</u>
Monday 9/15	Broder, John M. and Maynard, M. May 20, 2009. "As Political Winds Shift, Detroit Charts New Course" New York Times. Healy, James R. August 29, 2012. "How the auto industry will be expected to reach 54 mpg" Courier- Journal.	<u>Understanding Our Energy Choices: Politics: Why did it take the U.S. government over 30 years to increase the fuel economy standards for vehicles?</u>
Thursday 9/18	"Behind the Curve: Have U.S. Automakers Built the Wrong Cars at the Wrong Time — Again?" July 9 2008 http://knowledge.wharton.upenn.edu/article/behind-the-curve-have-u-s-automakers-built-the-wrong-cars-at-the-wrong-time-again/	<u>Understanding Our Energy Choices: Why did U.S. manufacturers make gas guzzlers when others were making hybrids?</u>
Monday 9/22	Lauer, J. 2005. "Driven to extremes: Fear of crime and the rise of the sport utility vehicle in the United States" Crime Media Culture 1(2): 149–168	<u>Understanding Our Energy Choices: Why do so many Americans choose to drive SUVs?</u>
Thursday 9/25	Silver, Nate. May 6, 2009. "The End of Car Culture?" Esquire. Rosenthal, E. May 11, 2009. "In German Suburb, Life Goes on Without Cars" New York Times. Multiple Contributors, May 12, 2009. "Car-Free in America?" New York Times	<u>Understanding Our Energy Choices: Why do Americans Drive So much?</u> Watch in class segments of Blueprint for America: Road to the Future
Monday 9/29	Vaughn, J. 2007. "The Nuclear Power Debate" in Environmental Politics: Domestic and Global Dimensions. Keystone Center. 2007. Nuclear Power Fact	<u>Understanding Our Energy Choices: Is nuclear the answer to our energy problems?</u>

	Finding: Executive Summary.	
Thursday 10/2	Japan and the Nuclear Meltdown Onishi, Norimitsue. 2011. "Safety Myth' Left Japan Ripe for Nuclear Crisis" New York Times.	<u>Understanding Our Energy Choices: Why did Japan choose nuclear?</u>
Monday 10/6	"The Elusive Negawatt – Energy Efficiency" The Economist. May 10, 2008. "Efficiency's Promise Is Too Good to Be True" David Owen APRIL 4, 2012 and "Reduce Energy Use and Beware of the Rebound Effect" by Matthew Kotchen NyTimes.com (room for debate)	<u>Understanding Our Energy Choices: How can increasing energy efficiency lead to more energy use?</u>
Thursday 10/9	Parkinson, J. 2009. "The Not So Sunny Side of Solar Panels" Voice of San Diego. Cha, Ariana Eunjung. 2008. "Solar Energy Firms Leave Wastes Behind in China" Washington Post	
Monday 10/13	Kane, J. 1993 "Letter from the Amazon: With Spears at All Sides" The New Yorker: 69:31:54-79. The Economist. May 21st, 2009. "Justice or Extortion: The Hounding of an American Oil Company"	<u>Extended Impacts: Why is the Amazon polluted?</u>
Thursday 10/16	Science Daily. June 19, 2007. "Crude Oil Contains Less Toxic Mercury Than Coal." Science Daily. May 3, 2009. "How Mercury Emissions Reach Tuna And Other Seafood, And Why Mercury Contamination Is Likely To Worsen" Assignment: Find the % of Mercury you are getting http://www.gotmercury.org/article.php?list=type&type=75	<u>Extended Impacts: Why is there Mercury in my Tunafish Sandwich?</u>
Monday 10/20	Friedman, Thomas L. 2008. "Fill 'Er Up with Dictators: Petropolitics" pp.77-110 in Hot, Flat and Crowded Farar, Sraus and Giroux: New York.	<u>Extended Impacts: Is there a connections between oil and democracy?</u>
Thursday 10/23	MIDTERM EXAM	
Monday 10/27	Pacala, S. and Socolow, R. 2004. "Stabilization Wedges: Solving the Climate Problem for the Next 50 years with Current Technologies" Science 305:968-972.	<u>Improving Decision-Making: What are our Options?</u>

Thursday 10/30	Grove, Andy. 2008. "Our Electric Future" The American, The Journal of The American Enterprise Institute Schumacher, E.F. 1977. "Technology with a Human Face" from Small is Beautiful: Economics as if People Mattered	<u>Improving our Decision-making: What kind of energy systems are there?</u>
Monday 11/3	Dietz, T. 2003. "What is a Good Environmental Decision?" Human Ecology Review 10:1:33-39. Clemen, R.T. Reilly. T. 1999. "Chapter 1 – An Introduction to Decision Analysis" in Making Hard Decisions.	<u>Improving our Decision-making: What kind of energy system do we want?</u>
Thursday 11/6 (Lecture will be recorded & posted on-line)	Environmental Protection Agency. 2006. "Chapter 1 – Life Cycle Assessment" from Life Cycle Assessment: Principles and Practice. Environmental Protection Agency. 2009. "EPA Life Cycle Analysis of Greenhouse Gas Emissions from Renewable Fuels." NO CLASS THIS DAY	<u>Improving our Decision-making: What are the impacts of different energy sources across their life cycle?</u>
Monday 11/10	Guest Lecture TA Daniel Clark	
Thursday 11/13	Rosenthal, E. 2008. "Environmental Cost of Shipping Groceries Around the World" New York Times. Costanza, R. 1980. "Embodied Energy and Economic Valuation" Science 210:4475:1219	<u>Improving our Decision-making: How much energy is used to make this?</u>
Monday 11/17	Probyn, S. 2007. "The Tax that Saved the Planet" April 23, 2009. Vanity Fair	<u>How do we change our energy system? Price signals.</u>
Thursday 11/20	"German Energy Push Runs Into Problems" By MELISSA EDDY MARCH 19, 2014, New York Times "Germany's energy transition : Sunny, windy, costly and dirty" Jan 18th 2014 The Economist	<u>How do we change our energy system? Democratic Reform in Germany</u>
Monday 11/24	"Solar Power in the Garden State" Advanced & Rutgers Issues in Issue Paper Number 5, May 2011	<u>Renewable Portfolio Standards: How did Renewable Portfolio Standards make Solar affordable for Rutgers?</u>
Tuesday 11/25	Students Pick	
Monday 12/1	Bowman, C. 2008. "SMUD rates customers on energy consumption" September 26, 2008. Sacramento Bee.	<u>How do we change our household energy systems? Consumption and Social Norms</u>
Thursday 12/4	CLASS CANCELLED	
Monday 12/8	Meyer, David S. "Protest and political opportunities." Annual review of sociology (2004): 125-145. How 350.org went from "strange kid" to head of the green class	<u>Where does political and social change come from?</u>

	By Heather Smith on 5 Feb 2014 http://grist.org/climate-energy/how-350-org-went-from-strange-kid-to-head-of-the-green-class/	
Friday 12/12	Final Analysis Due to Human Ecology Main office in Cook Office Building – Hard Copy by 5 pm	
Monday 12/22 9:30 to 11:00	FINAL EXAM	