

Department of Agricultural Economics, University of Kentucky
AEC 300-003: Energy Economics
Spring 2016

Instructor: Mehdi Nemati
Office: 330CE Barnhart Bldg., Department of Agricultural Economics
E-mail: mehdi.nemati@uky.edu
Office hours: Fridays 2:00 pm – 4:00 pm, and by appointment
Class: Mondays 3:00 pm – 3:50 pm, Agricultural Science Building North, Room N320

Prerequisites: Principles of Microeconomics (e.g. ECO 201)

Required Text: The course will rely heavily on readings available online. Links will be provided via this class website. No textbook will be used. Students are expected to read the material that I post a week before each session. Students will regularly read the Energy Information Administration's daily series "**Today in Energy**" (<http://www.eia.gov/todayinenergy/>). Sign up for email service here: <http://www.eia.gov/tools/emailupdates/>.

Course Description:

This course is a general energy economics course. It will cover a variety of topics related to its history, share, source, technology, government regulations, energy demand, energy supply, energy prices, environmental consequences of energy consumption and production, and various public policies affecting energy demand, supply, prices, and environmental effects. It is a new course and, as a result, it will have an experimental character to it. I will be seeking feedback from the students taking the course to help us to make it better.

Expected Learning Outcomes:

After completing this course, students will be able to:

- Understand basic economic concepts that underlie energy production and end use
- Explain how local, regional, and global institutions affect energy markets and prices
- Describe historical and current public policy issues related to energy in the U.S. and globally
- Illustrate key economic aspects of energy policy at local, state, and national levels.
- More developed in communication and presentation skills.

Grade weights for the class:

Problem sets	25%
Debate presentation	25%
Debate judging	10%
In-class exercises	10%
Attendance	10%
Quiz	20%
Total	100%

Your final grade average will translate into a letter grade as follows:

90%–100% = A, 80%–89.99% = B, 70%–79.99% = C, 60%–69.99% = D, below 60% = E.

Methods to Assess Outcomes

Class sessions consist of a mix of lectures and group discussions. Reading assignments include book chapters, articles and other additional sources which will be available on the course webpage. Class discussions relate to assigned readings, problem sets, and to field work related to local energy issues. Students are encouraged to work together on problem sets, so long as each student prepares his or her own written answers. Material drawn from the problem sets may be used in interactive in-class exercises. Students will participate in one of three in-class debates on a contemporary energy policy issue. Examinations consist of a mid-term and a final.

Problem sets

For the problem sets you're encouraged to work in groups, but must each turn in a problem set that is your own work (exceptions will be announced in class). Problem sets will be assigned a grade from 0-10 based on an impression of your work. (Note that this means presentation matters: your grade will be affected if I can't read your writing, you don't show your work, etc.) As a general rule, most of you should receive grades of 8 or 9 on most problem sets. If you are consistently getting grades below 6 and are really trying, you should discuss your situation with me. Also note that this means that I do not provide detailed feedback by writing comments individually on your problem sets. We will have **6-8 problem sets** during the semester depending on the topics that we cover.

Debates

- Kentucky and the nation face a number of urgent challenges and opportunities related to energy policy. Economic questions are embedded in each of these policy choices, and opinions differ on the best choice. Working on the assumption that informed debate can stimulate critical thinking on the issues, each student will participate in one of several group debates that will be held during class at various times during the semester. Students not involved in a particular debate will select the winning team based on a set of criteria distributed in class prior to the debate. We will have 2-3 debates in during the semester depending on the class size.
- Tentative topics for the debates are: **(i) Is alternative energy the answer? (ii) Should the Environmental Protection Agency regulate greenhouse gases? (iii) Cutting pollution from coal-fired power plants.**
- The nature of this material means there will be controversy. Be respectful and courteous of others when providing your perspective and reacting to the perspective of others. Students are expected to address the issues under discussion, never the personalities of the other participants. Failure to do so will be a minimum of **50 percent of points** deducted from debate presentation points.

Attendance, In-class exercises and debate judging

This part has 30% shares in your final grade

- Attendance: A student who will miss class due to a university-approved trip or to observe a religious holy day should make that intention known to the instructor prior to the absence so that accommodations can be made in accordance with university policies. In general, I expect that you will be in class and assume that if you choose not to be in class it is for good reason. When you miss class, it is your responsibility to catch up or cover missing materials or assignments. The class website and your fellow students should be your first recourse in such cases.
- In class exercises: Contribute to class discussions and participate in other in-class activities. Please note that in class exercises mostly relies on your readings from “Energy in Today” and the “problem sets”. Each student is expected to share at least one news about energy to the class for **5 minutes**. I will call this section “Weekly News”. Students that are responsible for the weekly news will be notified a week in advance.

- Debate judging: It is expected that each non-presenting student gives some input on the topic matter during each debate discussion. Students not involved in a particular debate will select the winning team based on a set of criteria distributed in class prior to the debate.

Quiz

On **Monday April 11th**, we will have an in class quiz based on the material that I present in the class during the semester. A completed individual response counts towards **20%** of your final grade.

Students with Disabilities

If you have a documented disability that requires academic accommodations, please see me as soon as possible. In order to receive accommodations in this course, you must provide me with a Letter of Accommodation from the Disability Resource Center (Room 2, Alumni Gym, 257-2754, jkarnes@uky.edu) for coordination of campus disability services available to students with disabilities. We can then collaborate on the best solution. Additional information is available at www.uky.edu/StudentAffairs/DisabilityResourceCenter/

Cheating and Plagiarism

Cheating of any form is prohibited. Students found guilty will face penalties outlined in Student Rights and Responsibilities §6.4.0. The minimum punishment in AEC 300-004 is a 0 for the exam or assignment. Copying word-for-word is clearly plagiarism, but not giving credit to someone else's thoughts or original work is still plagiarism. Do **not** take credit for others' efforts and contributions. Feel free to ask me questions whenever something is not clear. See <http://www.uky.edu/StudentAffairs/Code/part2.htm> for the details.

Syllabus and course outline changes:

The instructor may adjust the syllabus or course outline during the course of the semester. Updated versions of the syllabus and course outline will be maintained on this class website.

Outline of Potential Topics

Tentative outline is on the **page 5** of the syllabus. The course is designed to cover a variety of energy sources from most to least important, based on each source's contribution to total energy consumption in the US.

Topics	Detail	Topics	Detail	Topics	Detail
What is energy	Forms of Energy Sources of Energy Laws of Energy	Nonrenewable Sources : Diesel Fuel	Where Our Diesel Comes From Use of Diesel Prices and Outlook Factors Affecting Diesel Prices Diesel Fuel Surcharges Diesel & the Environment	Renewable Sources: Biomass	Wood and Wood Waste Waste-to-Energy (MSW) Landfill Gas and Biogas Biomass & the Environment
Units and Calculators	Energy Conversion Calculators British Thermal Units (Btu) Degree-Days	Heating Oil	Where Our Heating Oil Comes From Use of Heating Oil Prices and Outlook Factors Affecting Heating Oil Prices	Renewable Sources: Biofuels: Ethanol & Biodiesel	Ethanol Use of Ethanol Ethanol & the Environment Biodiesel Use of Biodiesel Biodiesel & the Environment
U.S. Energy Facts	State and U.S. Territory Data	Nonrenewable Sources : Propane	Delivery and Storage Use of Propane Factors Affecting Propane Prices Propane & the Environment	Renewable Sources: Wind	Electricity Generation from Wind Where Wind Power Is Harnessed Types of Wind Turbines History of Wind Power Wind Energy & the Environment
Use of Energy	In Industry For Transportation In Homes In Commercial Buildings Efficiency and Conservation	Nonrenewable Sources : Natural Gas	Delivery and Storage Natural Gas Pipelines Liquefied Natural Gas Where Our Natural Gas Comes From Imports and Exports How Much Gas Is Left Use of Natural Gas Prices Factors Affecting Natural Gas Prices Natural Gas & the Environment Customer Choice Programs	Renewable Sources: Geothermal	Where Geothermal Energy Is Found Use of Geothermal Energy Geothermal Power Plants Geothermal Heat Pumps Geothermal Energy & the Environment
Energy and the Environment	Greenhouse Gases Effect on the Climate Where Greenhouse Gases Come From Outlook for Future Emissions Recycling and Energy	Nonrenewable Sources : Coal	Mining and Transportation Where Our Coal Comes From Imports and Exports How Much Coal Is Left Use of Coal Prices and Outlook Coal & the Environment	Renewable Sources: Solar	Photovoltaics and Electricity Where Solar Is Found Solar Thermal Power Plants Solar Thermal Collectors Solar Energy & the Environment
Nonrenewable Sources : Oil and Petroleum Products	Refining Crude Oil Where Our Oil Comes From Imports and Exports Offshore Oil and Gas Use of Oil Prices and Outlook Oil and the Environment	Nonrenewable Sources : Nuclear	Nuclear Power Plants The Nuclear Fuel Cycle Where Our Uranium Comes From U.S. Nuclear Industry Nuclear Power & the Environment	Secondary Sources: Electricity	The Science of Electricity Magnets and Electricity Batteries, Circuits, & Transformers Measuring Electricity How Electricity Is Generated Electricity in the U.S. Delivery To Consumers Use of Electricity Prices and Factors Affecting Prices Electricity & the Environment
Nonrenewable Sources : Gasoline	Where Our Gasoline Comes From Use of Gasoline Prices and Outlook Factors Affecting Gasoline Prices Regional Price Differences Price Fluctuations History of Gasoline Gasoline & the Environment	Renewable Sources: Hydropower	Where Hydropower Is Generated Hydropower & the Environment Tidal Power Wave Power Ocean Thermal Energy Conversion	Hydrogen	Production of Hydrogen Use of Hydrogen

