

AEDE/IS 4320
Energy, the Environment, and the Economy
Fall 2016

***Time:* Tuesday and Thursday, 220-3:40**
***Room:* Cunz Hall 150**

Instructors

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Required Reading Materials:

Yergin, Daniel. 2011. *The Quest: Energy Security, and the Remaking of the Modern World*. New York: Penguin Press.

All assigned readings in the syllabus (which will be available on the Carmen site).
Additional readings may be assigned during the course and placed on Carmen.
All readings in the case studies

Optional Reading:

Tietenberg, Tom and Lynne Lewis. 2012. *Environmental and Natural Resource Economics*. Boston: Pearson Education.

The Tietenberg and Lewis text can help you better understand economics of the environment and natural resources. We will use some materials from that book, but the materials will be presented via lecture notes.

Objectives: At the completion of the course, the student will be able to

- Analyze market trends that influence energy consumption and production, and the demographic, institutional, and economic factors that influence these trends;
- Understand the economics of non-renewable resources and energy exploration;
- Explain economic and policy drivers that enable the transition to renewable energy;
- Recognize externalities associated with energy production, and analyze the benefits and costs of different sources of energy;
- Assess the influence of alternative energy policies on businesses and trade.

Honors Section: An embedded honors section of this course is available. Please check with the instructor if you would like take this option.

Prerequisites: Economics 200 or equivalent or permission of the instructor

Course Requirements

Homework: There are 5 homework assignments during the term. Homework assignments are due at the end of class on the day noted. Homework turned in late will be penalized 5% per day for up to a week. Homework can only be turned in for one week after the due date.

Exams: There will be one midterm exam, given in class on October 18, 2016.

There will be a final exam, given on December 9, 2016 from 4:00 – 5:45p

Quizzes and Attendance: There will be up to 14 quizzes during class. Students who attend and take a quiz will get full credit for that quiz. Quizzes may be given at any time during class. **Students must submit 8 quizzes, or they will lose 10% from their final grade.**

Course Grades:

Homework (5)	45% (9% each)
Midterm (October 18)	25%
Final Exam	30%
Total	100%

Grading Scale:

A 93-100	C+	77-79	E	<60
A- 90-92	C	73-76		
B+ 87-89	C-	70-72		
B 83-86	D+	67-69		
B- 80-82	D	60-66		

Documented illness, death in the family, or other extreme circumstances are the only excused absences.

Make-up exams will be given only in the event of excused absences.

Academic Misconduct: Each student is responsible for his/her own work on exams and exercises. Plagiarism and other forms of cheating will not be tolerated. University rules provide severe penalties for academic misconduct, ranging from course failure to dismissal from the University. The Code of Student Conduct is available at the Office of Student Affairs' web site - http://studentaffairs.osu.edu/info_for_students/csc.asp

Student Disabilities: Any student who feels s/he may need an accommodation based on the impact of a disability should contact the instructor privately to discuss your specific needs.

Topics and readings

Aug. 23: Introduction

Readings: Yergin, Chs 1-5

IEA: World energy outlook, 2015 – Executive Summary

Aug. 25: Where are the world's energy resources?

Aug 30 & Sept 1: Demand for energy resources

Spencer Dale, Group Chief Economist, British Petroleum. "Energy in 2014: A Year of Plenty."

Wolfram et al., 2012. How Will Energy Demand Develop in the Developing World?

Sep. 6: Introduction to the Electricity Sector (BB)

HW 1: Trends in energy use and demand (Due Sept. 8)

Sept 8: In class exercise on levelized cost of electricity

Sep. 13: Supply, Market Equilibrium and Surplus

Readings: Yergin, Chs 6-10

Chapters 1-2 in "Economic Valuation of Natural Resources: A Handbook for Coastal Resource Policymakers." NOAA Coastal Ocean Program, Decision Analysis Series No. 5.

Sept 15: In class example on demand and supply

Sept 20: Discounting and the extraction of non-renewable resources

Readings: Yergin, Chs 11-13

HW 2: Market equilibrium and market shocks (Due: Sept 22)

Sept 22: Energy Supply: Oil, Hubbert's peak, backstop technologies

Yergin, Chs 14-16

Holland, SP. 2013. Economics of Peak Oil. Encyclopedia of Energy, Natural Resource, and Environmental Economics. Elsevier.

Lynch, M. 2009. 'Peak Oil' Is a Waste of Energy. New York Times. Op-Ed. August 25, 2009.

Chu, S and A Majumdar. 2012. Opportunities and challenges for a sustainable energy future. Nature. 488: 294-303. (doi:10.1038/nature11475)

Sept 27: Energy Trading (BB)

Sept 29: In class example on discounting and non-renewable extraction

Oct 4: Energy Supply: Coal (BB)

Oct 6: Energy Supply final issues.

HW 3: Assessing the energy transition (due October 6)

Oct 11: Energy Supply: Natural Gas (BB)

Midterm Exam – October 18, 2016

Oct 20: Market failures: Monopoly/cartel; Price floors and caps

Readings: Yergin, Chs 17-20.

Oct 25: Air Pollution Externalities (BB)

Oct 27: Market failures: Economics of externalities and public goods

Duke, JM. 2013. Property Rights and the Environment. Encyclopedia of Energy, Natural Resources, and the Environment. Elsevier.

Nov 1: Benefit Cost Analysis (Externalities, public goods, techniques for measuring value, discounting, BCA)

Readings: Yergin, Chs 27-29

Hanley, N. 2013. Environmental Benefit Cost Analysis. Encyclopedia of Energy, Natural Resources, and the Environment. Elsevier.

Nov. 3: In class exercise on benefit cost analysis

HW 4: Benefit Cost Analysis (due November 10)

Nov 8: How do we control pollutants from energy production and use?

Readings: Yergin, Chs 30-32

Chapters 6-10 in Sterner, T. 2003. Policy Instruments for Environmental and Natural Resource Management. Washington: Resources For the Future.

Nov 10: Economics and Policy of Renewable Energy (BB)

Nov 15: Climate Policy (BB)

Braine, B. and B. Feldman. " Economics of Greenhouse Gas Trading: Reaching Economic Goals Cost Effectively." International Emissions Trading Association.

Nov 17: How do we control pollutants from energy production and use? (Continued).

Nov 22: Climate Change Economics

Readings Yergin, Chs 21-26

Nov 29: Social Cost of Carbon (BB)

Dec 1: Climate Change discussion

HW 5: Economic assessment of alternative policies (due December 6)

Dec 6: Finish material/Review