

ARE 445/693: Energy Economics/Advanced Energy Economics Syllabus

January 9, 2014

Instructor

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Schedule

Tuesday/Thursday, 2–3:15pm
2001 Agricultural Sciences Building
Office Hours: Tuesday/Thursday, 10:00–11:00am (or by advance appointment)

Prerequisites

Those enrolled in 445: None. Although it will be highly advantageous to you if you have taken ARE 187: Energy Resource Economics and ARE 150: Introduction to Agricultural and Agribusiness Economics (or ECON 201: Principles of Microeconomics).

Those enrolled in 693S: At least one course in college-level calculus and preferably one course in the principles of microeconomics.

Rationale for Course

The production and consumption of energy are extremely important for all sectors of the US and world economies. Energy is a vital component of economic development and essential to maintaining the lifestyles that we have grown accustomed. Consumption and production related activities associated with fossil fuels also account for a high percentage of pollution remediation spending and environmental problems in the United States. This figure undoubtedly will increase if further access is granted to development of national park reserves and if global climate change are addressed.

As readily accessible reserves are depleted energy production will become more difficult and expensive since we rely heavily upon depletable resources such as coal, oil and natural gas and little effort have been made to develop renewable resources such as solar, wind, geothermal or hydroelectric power. Further, much of our oil and gas are imported from foreign countries, who may or may not necessarily share our ideal of open markets or beliefs.

Our high standard of living has been made possible largely through the availability of inexpensive energy. The cost of energy affects our choices of economic activities, transportation, and lifestyle. On a global scale, international politics and national economies are heavily influenced by the price of energy sources such as oil and natural gas.

Energy is clearly important to all individuals and society; however, the general public often lacks the knowledge about many of the basic forces associated with this industry. Few completely understand the available choices of energy and the consequences associated with these choices. It is imperative to develop an understanding of the choice because of their affects on our present and future life styles.

Course Objectives

The course objectives are to understand the economics of (1) energy demand, (2) energy supply, (3) energy market structures, and (4) global energy challenges. More specifically, this course will help you the student to develop an understanding of economic modelling of energy resources.

Course Description

This is an advanced economic course for individuals interested in fossil fuel and renewable sources of energy, the underlying economics of the energy market, the effects of energy production and consumption on the environment, and the relationships among energy and politics. This course will address the choices available in the supply and demand of energy using more advanced economic theory.

The course will consist of two lectures per week, two individual homework assignments (or problem sets), one mid-term exam, and a final exam.

I will do my best to ensure that homework assignments will be given out at least two weeks prior to the due date. The preliminary due dates are listed in the course schedule below.

Grades will be based upon the following percentages: the average of two homework assignments (33.3%); mid-term exam (33.3%) and final exam (33.3%).

For students enrolled in ARE 693: You will receive one to two extra questions on each problem set and exam. As a graduate student you are expected to show a more thorough knowledge of the modeling concepts through the use of basic calculus and linear programming.

Credit for make-up exams will be given only upon approval of the instructor prior to the exam. Unless otherwise specified, assignments and papers assignments can be turned in by 5 p.m. on their due date. Late assignments and papers will not be accepted unless prior approval of the instructor is received. No make-ups will be accepted for missed in-class assignments unless prior approval has been arranged.

Attendance Policy

Attendance and punctuality in lectures are expected.

Cell Phones

To avoid disrupting the class, I request that students turn their cell phone ringers off. Your cooperation will be much appreciated.

Use of cell phones and other electronic devices during quizzes and examinations is strictly prohibited. Students are required to keep their phones in their pockets, back packs, or purses during exams and quizzes (See Scholastic Honesty Statement below) unless authorized by the instructor.

Scholastic Honesty Statement

WVU students are expected *not* to violate the academic honesty policies as spelled out in Article III, Section B (1) of the *Student Conduct Code*. <http://studentlife.wvu.edu>

Social Justice Statement

“West Virginia University is committed to social justice. I concur with that commitment and expect to maintain a positive learning environment based upon open communication, mutual respect, and nondiscrimination. Our University does not discriminate on the basis of race, sex, age, disability, veteran status, religion, sexual orientation, color or national orientation. Any suggestions as to how to further such a positive and open environment in this class will be appreciated and given serious consideration.”

“If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class. Please advise me and make appropriate arrangements with Disability Services (293-6700).”

Text and Other Reference Sources

Required text: Dahl, C.A. (2004). *International Energy Markets: Understanding Pricing, Policies, and Profits*. PennWell Corporation: Tulsa, Oklahoma.

Other Reading Materials:

- Bhattacharyya, S.C. (2011). *Energy Economics: Concepts, Issues, Markets and Governance*. Springer-Verlag: London, UK. Available online at: Energy Economics.
- Hinrichs, R.A., and Kleinbach, M. (2005). *Energy: Its Use and the Environment, Fourth Edition*. Harcourt College Publishing: New York.
- Tietenberg, T. and Lewis, L. (2012). *Environmental & Natural Resource Economics, Ninth Edition*. Pearson Education, Inc.: Boston, MA.

Course Schedule

Please note that the Schedule is subject to change.

Date	Topic	Readings
1/9	Course Introduction	
1/14	Introduction to Economic Principals	
1/16	Review of Economic Concepts	
1/21	Review of Economic Concepts	
1/23	Review of Economic Concepts	
1/28	Review of Economic Concepts	
1/30	Review of Economic Concepts	
2/4	Review of Economic Concepts	
2/6	Review of Economic Concepts	
2/11	Perfect Competition and the Coal Industry	Chapter 3
2/13	Perfect Competition and the Coal Industry	Chapter 3
2/18	Perfect Competition and the Coal Industry	Chapter 3
2/20	Perfect Competition and the Coal Industry	Chapter 3
2/25	Perfect Competition and the Coal Industry	Chapter 3
2/27	Mid-term Exam	
3/4	Natural Monopoly and Electricity Generation	Chapter 4
3/6	Natural Monopoly and Electricity Generation	Chapter 4
3/7	Last Day to Drop	
3/11 - 3/14	Spring Recess	
3/18	Natural Monopoly and Electricity Generation	Chapter 4
3/20	Deregulation and Privatization of Electricity Generation	Chapter 5
3/25	Deregulation and Privatization of Electricity Generation	Chapter 5
3/27	Monopoly, Dominant Firm, and OPEC	Chapter 6
4/1	Monopoly, Dominant Firm, and OPEC	Chapter 6
4/3	Monopoly, Dominant Firm, and OPEC	Chapter 6
4/8	Market Structure, Transaction Cost Economics, and U.S. Natural Gas Markets	Chapter 7
4/10	Market Structure, Transaction Cost Economics, and U.S. Natural Gas Markets	Chapter 7
4/15	Externalities and Energy Pollution	Chapter 8
4/17	Externalities and Energy Pollution	Chapter 8
4/22	Game Theory and the Western European Natural Gas Market	Chapter 11
4/24	Game Theory and the Western European Natural Gas Market	Chapter 11
4/25	Last day of Classes	
4/29	Final Exam 8–10am	