

THE GEORGE WASHINGTON UNIVERSITY
Department of Economics
Spring 2012

ECON 2195.80 Energy Economics (66587)
ECON 6295.80 Energy Economics (64339)
TR 9:35am-10:50am 2020 K Street - 12

Professor Fred Joutz

Office Hours: T and R 11:15am - 12:15am and by appointment
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Course Description:

Energy economics is the application of micro-economic principles to the energy sector. You will learn the fundamentals necessary to analyze energy markets from an economic and financial perspective. This course will be very applied; much of the learning will be driven by working problems. We will cover a variety of static and dynamic theoretical and empirical topics related to energy demand and supply. There will be some discussion of the macroeconomy-energy relationship.

I will rely primarily on the textbook, but will provide updated supplemental information to expand upon the concepts presented in class and provide more current information. We may even work with drafts of the upcoming edition of the textbook. This course will focus on understanding the characteristics of various energy markets, how these characteristics affect economic efficiency goals, approaches to evaluating the welfare effects of these market characteristics, and policies that can be used to address market failures.

Data, primarily from the United States, will be used to illustrate simple relationships. Long run relationships, policy issues, and the interdependence of the domestic economy with the rest of the world will be discussed.

I hope to arrange for guest speaker(s) to join the class from numerous contacts in the Washington area.

Course Prerequisite: Students are assumed to have taken Microeconomics at the Intermediate level (ECON 101) or a MA Survey Microeconomics course (ECON 217). Do not try to take the course without that background.

Required Textbook: *International Energy Markets: Understanding Pricing, Policies, and Profits*. Carol A. Dahl. PennWell.

Recommended Textbook:

Energy Economics: Concepts, Issues, Markets and Governance, Bhattacharyya, Subhes, Springer 2011.

The Quest, Daniel Yergin, Penguin Press.

Additional Comments: The study of economics is a cumulative one. The pace will be rapid. You will be expected to have read the material relevant to each lecture. Do not save it for the last minute, because it is too much to absorb. If you are unsure, do not hesitate to ask me about your reading assignments. There are three ways to develop and analyze an economic issue. They are: an intuitive explanation, graphical, and mathematical. You can firmly understand an issue by trying to explain it using the three tools.

Additional Comments: My teaching style is to provide a review of the theory in the book and then ask applied problems. Studying in pairs or groups is highly encouraged. Frequently having to explain a theoretical point to a peer or to discuss an issue with one is the best way to learn the material. In addition, you can benefit from meeting people and making friends.

We will be using the Blackboard system in the course. It will be used to disseminate lecture notes, problem sets, pose questions in discussion groups, and communicate via e-mail. All students are expected to log into the course site.

Learning Outcomes—

1. Energy economics is an applied economics course. Students will learn the terminology and analytical tools for analyzing energy markets and market structures.
2. Students will be able to collect, analyze and present energy and economic data and attempt to test hypotheses.

Grading

Problem Sets	40%
Quizzes	30%
Final Test	30%

There will be six problem sets; they will be worth 8 points each toward your final grade. Problem sets account for 40 points of your final grade. They will not be accepted late. If you miss class, e-mail it as a pdf file or fax it to (202) 994-6147. Your five highest scores from the problem sets will count toward your final grade. You may miss one problem set or drop your lowest score.

There will be six quizzes; they will be worth 6 points each toward your final grade. The quizzes will be announced and given at the start of class. Do not be late. Your five highest scores from the short quizzes will count toward your final grade. You may miss one quiz or drop your lowest score. The total points on quizzes you can earn are 30 points toward your final grade.

The final exam is worth 30 points.

A make-up quiz or test is only offered in the case of documented family or medical emergencies. Grades are made on a curve and based on a weighted score of the total possible points. You will receive problem sets approximately one week in advance.

Students registered for ECON 6295 are required to write two short papers. You will receive more information later.

The problem sets can be worked on together. In fact, it is encouraged. If you work in a small group, only submit one set of answers.

Academic Integrity: All graded work must be completed in accordance with The George Washington University Code of Academic Conduct. Plagiarism in any form is a violation of this Code. Examples of plagiarism include:

- buying or borrowing a paper;
- copying a paper entirely or in part from any source;
- summarizing a source without adequate citation;
- using thoughts (including wording) belonging to someone else without citation, etc.
- It is also a violation of the Code if the research paper has been used in its entirety in another class. (A previous paper of yours may be the basis for further research, but you must discuss this with me in advance).

A violation of the Code results in a grade of F, notification of the Office of Academic Integrity, and a possible hearing before the Academic Integrity Council. All students must read the Code of Conduct. check the web-site at <http://www.gwu.edu/~ntegrity/code.html> .

Disability: Any student who feels he/she may need an accommodation based on the impact of a disability should contact the Disability Support Services office in the Marvin Center, Suite 242, to establish eligibility and to coordinate reasonable accommodations. For additional information, please refer to <http://gwired.gwu.edu/dss/>

Rough Outline and Dates

An Introduction to Energy Analysis (1/17-1/19)

Forms of Energy
Units of Energy Measurement and Conversion
Historical Patterns and Future
Trends in Energy Supply and Consumption

Analyzing Energy Markets: Part I (1/26-1/31)

The coal market, supply and demand
Short-run and Long-run Elasticities
Energy Taxes, Subsidies and Social Welfare

Analyzing Energy Markets: Part II (2/2-2/9)

Electricity generation and natural monopoly
Electricity generation and deregulation
Electricity Consumption by Sector and Time Series

Analyzing Energy Markets: Part III (2/14-2/28)

World oil markets
OPEC and Dominant Firm
Transportation
Economics of Non-Renewable Natural Resources
Allocating Production Over Time

Analyzing Energy Markets: Part IV (3/2-3/9)
Natural Gas Consumption and Supply
Evolution of the Natural Gas Industry
Revolution: Electricity Deregulation, Environment, and Shale

Analyzing Energy Markets: Part V (3/21-3/30)
Energy and the Environment
Externalities and Energy Pollution
Public Goods and Climate Change
Energy Conservation and Efficiency

Analyzing Energy Markets: Part VI (4/3-4/12)
Constructing Supply and Cost Curves
Unit or Levelized Costs
Economics of Renewable Energy Resources
Evaluating Energy Projects

Analyzing Energy Markets: Part VII (4/17-4/26)
Energy, the Economy, and Security
Supply Shocks and Macroeconomic Activity
Supply Shocks and Policy Responses

Analyzing Energy Markets: Part VIII (time permitting)
European natural gas market and game theory
Energy futures, options and risk