ECONOMICS 465, ECONOMICS OF ENERGY     SPRING 2008

INSTRUCTOR:  David Gallo
OFFICE:  Butte 649B
OFFICE HOURS:  MF 8:20-9:00 & MWF11:00-12:00
W 1:50-2:20
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PREREQUISITE:  Economics 301

COURSE GOALS/LEARNING OBJECTIVES:

1.  To examine the future availability and costs (direct and external) associated with the use of petroleum and other fossil fuels.
2.  To examine the incentives and constraints governing energy efficiency in the residential, commercial, industrial, and transportation sectors of the U.S. economy.
3.  To analyze the interrelationship between energy availability and the performance of the U.S. economy (inflation, unemployment, and the rate of productivity growth).
4.  To examine the alternative fuels and technologies available in the transportation and electricity production sectors that would reduce the emissions responsible for global climate change and reduce petroleum import dependency.

COURSE STRUCTURE/ASSESSMENT:

PAPER/PRESENTATION:  In addition to the final report (due at the end of the 14th week), you are required to submit a formal proposal, a midterm report, and make an oral presentation (during the 11th, 12th, or 13th weeks). Further discussion of the requirements is included in the section following the course outline.

GRADING:  Your grade will be computed as follows:
90% - paper and presentation grades
10% - an evaluation of your class preparation and participation in classroom discussion.
The plus/minus grading system will be used in marginal cases only.

READINGS:  Readings will be available online.

ATTENDANCE:  Attendance is required. You are permitted four absences. The fifth absence will result in a grade of F. Attendance will be taken at the beginning of class. If you are not there at the time roll is taken, you will be considered absent. Leaving class early also counts as an absence. Since the four allowed absences include those for legitimate reasons, don’t waste them. It doesn’t matter if you have a reasonable excuse for the fifth one—the result is still the same.

COURSE OUTLINE:

I.  Introduction

Topics:
1.  Perspectives on energy problems and solutions
2.  Efficiency in energy use
a. Thermodynamic efficiency
b. Economic efficiency: static and dynamic
3. Energy availability and macroeconomic performance
4. Constraints on fossil fuel use—increasing dependence on OPEC oil and environmental damage.
5. Future energy supply options

II. Forecasting petroleum supply, demand, and prices

Topics:
1. Non-OPEC petroleum
2. U.S. petroleum production, demand, and import dependence
3. World petroleum reserves and production capacity
4. OPEC’s market share and the potential for supply and price instability in world petroleum markets

III. The basis for OPEC’s petroleum production and pricing decisions

Topics:
1. Conflicting goals within OPEC
2. Long-run vs. short-run revenue maximization
3. The elasticity of demand for OPEC oil
4. Target capacity utilization models
5. Expectations and price instability

IV. Improving the efficiency of energy use

Topics:
1. Improving the efficiency of transportation systems including the fuel efficiency of automobiles—availability of technology and incentives for adoption
2. Potential for reducing energy use in residential and commercial buildings. Cost effective analysis for conservation investments
3. Energy efficiency improvements in the industrial sector and the potential for expanded use of cogeneration systems
4. Comparison of the cost of reducing energy use (improving the efficiency of energy use) with the cost of expanding energy supplies
5. Energy market imperfections as impediments to investment in cost effective conservation measures
6. Regulatory mechanisms designed to promote conservation investment including tax credits, low interest utility finance, and mandatory efficiency standards for building and appliances

V. Potential for expanded use of renewable energy sources

Topics:
1. Renewable energy technologies—wind, geothermal, biomass, solar, etc.
2. Economic evaluation of energy technologies—levelized cost
3. Relative environmental externalities of alternative energy supply technologies
4. Role of government policy in developing renewable energy resources
PROJECT STRUCTURE

Due Date: End of:

Project Requirement

Week 4  1. Proposal: The proposal should be three or four typewritten pages and should include the following:
   a. A description of the energy issue you intend to analyze.
   b. The potential contribution the alternative energy source will make towards reducing import dependence and/or emission responsible for global climate change.
   c. Define the scope of your analysis to the extent that it is possible at this stage. Include a statement of your research goals.
   d. Include at least five sources you have consulted.

Week 8  2. Midterm Report: The midterm report is a summary of preliminary findings and methodological or data problems you have encountered. It should be four to six typewritten pages and should include the following:
   a. Your preliminary findings and the basis of those findings.
   b. A summary of the research goals you have achieved.
   c. A summary of methodological and/or data problems you have encountered and your plans for solving them prior to the due date for the final report.
   d. A description of any changes in project scope or methodology and your reasons for making the changes. To what degree have the necessary changes affected your ability to meet the research goals outlined in your proposal?
   e. A final report outline.

Week 11  3. Oral presentations will take place during the 12th through 14th weeks of the semester.

Week 14  4. Final Report: Your final report should be 20 to 25 double-spaced typewritten pages. Be sure to properly footnote all referenced materials. Although the actual structure of your paper depends on the specific subject and methodology, your paper should include the following components:
   a. A description of the topic you chose, its policy context, and the analytical methodology you used.
   b. A section containing your analysis including the potential contribution to the solution of energy problems and the unit cost (per barrel, per kWh, etc.) of the alternative you have assessed.
   c. Findings, conclusions, and policy implications.
   d. Bibliography.

Project Evaluation: The evaluation of your project will be based on all four phases. The grading emphasis will be divided between process and project, therefore, it is important that all due dates be met and that intermediate products be submitted with attention to detail. Of course, all submissions must be typed.

OTHER CONSIDERATIONS:

ADD/DROP POLICY: The University’s policy will be followed.

WRITING PROFICIENCY: Any written work having an unacceptable number of grammatical and/or spelling errors will be returned. A grade will not be given on an assignment until it meets reasonable writing standards.
DISABLED STUDENTS: Students with special needs should meet with me at the beginning of the semester so we can jointly determine how those needs can best be met.