

AAE/Econ/EnvSt/TransPU/URPL 671
Energy Economics

Term: Spring 2017

Class Meetings: MW: 2:30-3:45 PM in 6240 Social Science.

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Office hours: TuTh 1:30-2:30PM, or by appointment

Course Homepage: The course will use Learn@UW, by which readings, class assignments, and class notes will be distributed.

Course Objectives

The intentions of this course are threefold: to (1) explain national and global markets and institutions for various energy sources, including coal, crude oil, natural gas, electricity, and renewable energy; (2) examine microeconomic foundations and empirical perspectives of energy demand and supply; (3) apply economic logic and quantitative techniques to understand the main contemporary issues related to energy, for example, optimal pricing and allocation of energy resources, energy market structure, conduct, and performance, investment in renewable energy sources, and the economics of public policy affecting energy markets.

By taking this course, you should be able to:

1. Understand fundamentals of energy sources and technologies.
2. Be familiar with microeconomic theory with applications to energy industries and markets.
3. Build analytical skills in economic analysis and be able to apply the economic thinking to historical and contemporary energy-related issues.

Recommended Texts

Viscusi, W., J.E. Harrington, JR, and J.M. Vernon. 2005. *Economics of Regulation and Antitrust*. 4th ed. MIT Press. (VHV)

Supplemental Readings

1. Keohane, N. and S. Olmstead. 2007. *Market and the Environment*, Washington, DC: Island Press. (KO)
2. Bhattacharyya, S.C. 2011. *Energy Economics: Concepts, Issues, Markets and Governance*. Springer. (Bhattacharyya)
3. Dahl, C.A. 2004. *International Energy Markets: Understanding Pricing, Policies and Profits*. PennWell. (Dahl)

See References on pp. 4-6 and they will be posted on Learn@UW.

Grading

The final grade for the class will be calculated using the following weights:

Problem sets	25%
Class participation	5%
Group presentation	10%
Midterm/final exams	60%

About six problem sets will be assigned (typically due on Wednesday).

1. Two options for group presentations: (i) at the beginning of Wednesday class, there will be a session on the latest energy related news for about 15-20 minutes. Each group will lead the session once (see class schedule; email me your story/slides one week before presentation). (ii) 3 groups will present papers related to energy efficiency, which will be assigned later. Total number of groups will depend on total enrollment. Each group should have no more than 3 members.
2. There will be two closed note midterm exams.
3. Final exam (optional; comprehensive): **5/07/2017 (Sunday), 10:05am-12:05pm, Plant Science 108**. The score will be averaged with that of the lowest midterm.

Other Course Policies or Procedures

1. Late assignments will be penalized with 10 points for each day of lateness, unless you have obtained prior approval, or in the case of an unforeseen emergency. Written notification from your advisor or doctor will be required in both instances.
2. Make-up exams will be given only under extenuating circumstances, for which appropriate documentation will be required, and if advance arrangements are made with the instructor.
3. Students must notify the instructor within the first two weeks of class of the specific days on which he or she requests for religious observances.
4. Accommodating Disabilities: If you have a documented disability and anticipate needing accommodations in this course, please make arrangements to meet with me soon.
5. Academic Integrity: Acts of academic dishonesty will be penalized with a final grade of "F" for the course. In addition, university rules will be strictly enforced.

Tentative Course Schedule

Week 1	Content	Reading
1/18/2017 (W)	Introduction (“Energy Challenge”)	
Week 2		<i>Group list due</i>
1/23 (M)	Energy and Energy Economics	CEA 2006; Rotman 2009; Newell and Iler 2013.
1/25 (W)	Energy and Energy Economics	CEA 2006; Rotman 2009; Newell and Iler 2013.
Week 3		
1/30	Energy and Energy Economics	CEA 2006; Rotman 2009; Newell and Iler 2013.
2/1	Energy Demand	Bhattacharyya Ch. 3.
Week 4		<i>Problem set 1 due</i>
2/6	Linear Regression and Gasoline Demand Estimation	Sykes 1993; Hughes, Knittel and Sperling 2008
2/8	Electricity Demand Estimation	Herriges and King (1994); Reiss and White (2005)
Week 5		<i>Problem set 2 due</i>
2/13	Demand Side Management and Dynamic Pricing	Bhattacharyya Ch. 6.2; Borenstein 2010; Joskow 2012; Faruqui and Sergici 2010; Griffin and Puller 2009; Holland and Mansur 2006
2/15	Demand Side Management and Dynamic Pricing	Bhattacharyya Ch. 6.2; Borenstein 2010; Joskow 2012; Faruqui and Sergici 2010; Griffin and Puller 2009; Holland and Mansur 2006
Week 6		<i>Problem set 3 due</i>
2/20	Energy Efficiency	Gillingham et al. 2009; Frederick et al. 2002
2/22	Energy Efficiency	Gillingham et al. 2009; Frederick et al. 2002
Week 7		
2/27	Energy Efficiency	Gillingham et al. 2009; Frederick et al. 2002
3/1	Midterm I	
Week 8		
3/6	The Efficiency of Markets	KO Ch. 4; DOE 2002; Borenstein 2000
3/8	Natural Monopoly	VHV Ch. 11-12
Week 9		

3/13	Natural Monopoly	VHV Ch. 11-12
3/15	Regulation and Restructuring of Electric Power	VHV Ch. 12; Borenstein 2002; Craig and Savage 2013; Joskow 2006
Week 10		
3/20	Spring break; no class	
3/22	Spring break; no class	
Week 11		<i>Problem set 4 due</i>
3/27	Natural Resource Extraction and Pricing	KO Ch. 6; Pashigian Ch. 16; Livernois 2009
3/29	Natural Resource Extraction and Pricing	KO Ch. 6; Pashigian Ch. 16; Livernois 2009
Week 12		<i>Problem set 5 due</i>
4/3	Understanding Crude Oil Prices	Hamilton 2009; Maugeri 2009
4/5	Understanding Crude Oil Prices	Hamilton 2009; Maugeri 2009
Week 13		<i>Problem set 6 due</i>
4/10	Economic Regulation of Energy: Crude Oil and Natural Gas	VHV Ch. 18
4/12	Open Access and the Evolution of the US Sport Market of Natural Gas	Doane and Spulber 1994
Week 14		
4/17	Shale boom	Hausman and Kellogg (2015)
4/19	Midterm 2	
Week 15		
4/24	Oligopoly, Collusion and Antitrust	VHV Ch. 5
4/26	Oligopoly, Collusion and Antitrust	VHV Ch. 5
Week 16		<i>Problem set 7 (optional) due</i>
5/1	Economics of Renewable Energy	Heal 2010; Borenstein 2012; Joskow 2011
5/3	Economics of Renewable Energy	Heal 2010; Borenstein 2012; Joskow 2011

References

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- Borenstein, S. 2002. The Trouble with Electricity Markets: Understanding California's Restructuring Disaster. *Journal of Economic Perspectives* 16(1): 191-211.

- Borenstein, S. 2010. Time-Varying Retail Electricity Prices: Theory and Practice.
- Borenstein, S. 2012. The Private and Public Economics of Renewable Electricity Generation. *Journal of Economic Perspectives* 26(1): 67-92.
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