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## Economics of Energy

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- Contact:** [mar.reguant@northwestern.edu](mailto:mar.reguant@northwestern.edu).
- Office hours:** Wednesday 2-3:30 CST, Zoom (see Canvas) and at other times by appointment.
- Class meetings:** TTh, 2:40-4:00pm CST, Zoom (see Canvas).
- TA Sessions:** F 1:50-2:40, Zoom, by Tomás Wilner, [twilner@u.northwestern.edu](mailto:twilner@u.northwestern.edu).
- Prerequisites:** Econ 310-1: Intermediate Microeconomics I, Econ 310-2: Intermediate Microeconomics II, and Econ 281: Econometrics.
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The goal of this course is to understand the functioning and regulation of energy markets. The energy sector is a vital input to the economy. It is often highly concentrated, generating concerns about competition, and a big emitter of greenhouse gases and other pollutants, generating concerns about the environment. As a consequence, the energy sector is subject to substantial economic and environmental regulation.

We will use economic theory and empirical evidence to analyze the real-world operation of electricity, oil, and natural gas markets. These tools will allow us to critically understand how these markets are regulated. We will examine policies in a range of current topics.

The class will be structured in weekly modules:

- Introduction to Energy Markets (Week 1)
- Supply and Demand in Energy Markets (Week 2)
- Deadweightloss and inefficiencies in Energy Markets (Week 3)
- Natural Monopoly and Other Regulation in Energy Markets (Week 4 & 1/2)  
—**Midterm 1**—
- Disruptive Technologies in Energy Markets (Week 6)
- Transportation and Storage in Energy Markets (Week 7)
- Global and Local Externalities in Energy Markets (Week 8)
- Environmental Regulations in Energy Markets (Week 9-10)  
—**Midterm 2**—

**Course Format.** The class will have a virtual lecture format. I will use slides in each class to cover relevant materials. There will be readings, videos, and exercises before class. We will also have virtual exercises and discussion. Participation is always encouraged. I will actively seek for your input. Do not hesitate to ask questions! Others are likely to have them, too. Classes will also have a discussion component and might not take the full 80 minutes every time, but you should plan on staying for the full 80 minutes.

**Materials.** Links to readings for each lecture will be provided on Canvas, and will be a combination of book chapters, newspaper articles and research papers (you can find a sample of readings at the end of the syllabus). It is expected that you will complete the readings *before class* in order to take part in the in-class discussion and best digest the content. Readings are a complement, rather than a substitute, to attending the lectures.

I will also post slides and supplementary materials from each lecture on Canvas. Note that slides are not self-contained and exhaustive, and I often complement them with additional comments in class. Attending the lectures will be of high value if you want to do well in this class and will contribute to participation points.

**Grading.** The grading policy will be as follows:

Midterm 1	35 or 40%
Midterm 2	35 or 40%
Problem Sets	15%
Participation	10%

*Examinations.* The exams will be a take-home given the current situation (unless there is a change in the guidances we are receiving). I will provide clear examples on what to expect in the exam. The two midterms will account for a total of 75% of the grade. I will take the best of the two following scores:

$$\max\{35\% \times \text{Miterm1} + 40\% \times \text{Miterm2}, \quad 40\% \times \text{Miterm1} + 30\% \times \text{Miterm2}\}$$

The exams will be done synchronously administered via Crowdmark/Zoom. There will be no make-up exams. If you foresee missing the window for the exam, you must inform me before the exam deadline and have reasonable justification for it. Failure to do so will result in a score of zero.

*Problem Sets.* There will be four (4) problem sets throughout the course. The problem sets will be relatively short and meant to reinforce class material. You are allowed to work in teams, but make sure you clearly provide the names of the members of the team at the time of submitting your work.

Problem sets need to be handed in *before* they are due. Late problem sets will not be accepted.

I know you are all very busy and often experience conflicts between classes. You can miss or skip one problem set without penalty. I will take the average grade for the three best problem sets that you hand in on time.

*Participation.* You can obtain participation points during the class by actively engaging in the online discussions, in the classroom discussions, or in in-class quizzes. Each student can obtain up to 50 points, that you can get in different activities.

I will let you know clearly when an activity has participation points, to increase transparency in this part of the grade, but I encourage you to just participate for the sake of learning more! :)

**Video-conferencing policy.** We will be meeting on Zoom for our lectures. We will be having activities to allow participation with voice and video (so ideally be prepared to join that way if you feel comfortable to do so). You are also encouraged to ask questions throughout the class with the “raise your hand” function, by chat, or by directly unmuting yourself (if I don’t seem to see your raised hand or chat comments). If you have trouble connecting to class, a video recording of the class will be made available.

**Recording by the Instructor.** This class or portions of this class will be recorded by the instructor for educational purposes. These recordings will be shared only with students enrolled in the course in Canvas and will be deleted at the end of the quarter.

Note that this applies to recording of synchronous class components and not to pre-recorded lectures by the instructor and not featuring student contributions.

**Recording by Students.** Unauthorized student recording of classroom or other academic activities (including office hours) is prohibited. Unauthorized recording is unethical and may also be a violation of University policy and state law. Students requesting the use of assistive technology as an accommodation should contact [AccessibleNU](#).

**Copyright of Class Materials and Recordings.** Unauthorized use of classroom recordings—including distributing or posting them—is also prohibited. Under the University’s [Copyright Policy](#), faculty own the copyright to instructional materials—including those resources created specifically for the purposes of instruction, such as syllabi, lectures and lecture notes, and presentations. Students cannot copy, reproduce, display, or distribute these materials. Students who engage in unauthorized recording, unauthorized use of a recording, or unauthorized distribution of instructional materials will be referred to the appropriate University office for follow-up.

**Academic Integrity.** I take academic integrity very seriously. Suspected violations of academic integrity will be reported to the Dean’s Office. For more information on Northwestern’s academic integrity policies, see

<http://www.weinberg.northwestern.edu/undergraduate/courses-registration-grades/integrity/>

**Special Accommodations.** Northwestern University is committed to providing the most accessible learning environment as possible for students with disabilities. Should you anticipate or experience disability-related barriers in the academic setting, please contact [AccessibleNU](#) to move forward with the university’s established accommodation process ([accessiblenu@northwestern.edu](mailto:accessiblenu@northwestern.edu); 847-467-5530). If you already have established accommodations

with AccessibleNU, please let me know as soon as possible, preferably within the first two weeks of the term, so we can work together to implement your disability accommodations. Disability information, including academic accommodations as part of a student's educational record, is confidential under FERPA regulations.

More generally, we are at a moment of very high stress with many different crises going on at the same time. Do not hesitate to let me know if you are having trouble keeping up with the class.

**Sample Readings.** The following can serve as orientation for the level of readings.

*Book:* (available online)

- W. Kip Viscusi, , Joseph E. Harrington, , and John M. Vernon, *Economics of Regulation and Antitrust*, MIT Press.

*Sample research papers:*

- Davis and Muehlegger (2010), “Do Americans consume too little natural gas?”
- Borenstein, S., Cameron, C., and Gilbert, R. (1997) “Do Gasoline Prices Respond Asymmetrically to Crude Oil Price Changes?”
- Joskow, P. (2013), “Natural Gas: From Shortages to Abundance in the United States”
- Hastings (2004), “Vertical Relationships and Competition in Retail Gasoline Markets”
- Borenstein, S. and Bushnell, J. (2013), “The U.S. Electricity Industry after 20 Years of Restructuring”
- Wolfram, C. (1999), “Measuring Duopoly Power in the British Electricity Spot Market”
- Fabra and Reguant (2015), “Pass-through of Emissions Costs in Electricity Markets”