Course Title: Energy Economics

Section: 1

Semester/year: Fall 2019

Instructor or Coordinator: Peter Maniloff

Contact information (Office/Phone/Email): EH 324, maniloff@mines.edu

Office hours: Tuesdays 1-2. Office hours are my set-aside time to help students. Drop by anytime, no appoint needed. I’m happy to talk during office hours. If you have a conflict with office hours, email me to set up an appointment.

Class meeting days/times: Tuesdays and Thursdays, 11:00-12:15

Class meeting location: MZ 235

Web Page/Blackboard link (if applicable):

Teaching Assistant (if applicable):

Instructional activity: ___3__ hours lecture ___ hours lab ___ semester hours

Course designation: ___ Common Core ___ Distributed Science or Engineering

___ Major requirement ___ Elective ___ Other (please describe ____________)

Course description from Bulletin: Study of economic theories of optimal resource extraction, market power, market failure, regulation, deregulation, technological change and resource scarcity. Economic tools used to analyze OPEC, energy mergers, natural gas price controls and deregulation, electric utility restructuring, energy taxes, environmental impacts of energy use, government R&D programs, and other energy topics. Prerequisite: EBGN201. 3 hours lecture; 3 semester hours.

Textbook and/or other requirement materials:

Required text: No required text

Other required supplemental information: There is no required text. If you’re having a hard time following or want to go into more depth, a few references are below. For the textbooks, old editions are fine.

Micro: Goolsbee, Levitt, and Svyerson Microeconomics or Pindyck & Rubinfeld Microeconomics

Regulation: Viscusi and Harrington, Economics of Regulation and Antitrust


Fracking: Raimi, The Fracking Debate (this one is really good and cheap!)

Also, I highly recommend EIA’s Today in Energy, the Utility Dive email, and E&E News.
Student learning outcomes: At the conclusion of the class students will...

1. Students will get an introduction to energy markets.
2. Students will understand the nature of market failures and potential policy responses.
3. Students will gain familiarity

Brief list of topics covered:

1. Introduction to oil markets.
2. Introduction to natural gas markets.
3. Introduction to electricity markets.
4. Renewable energy markets and policy.
5. Energy efficiency policy and outcomes.

Policy on academic integrity/misconduct: The Colorado School of Mines affirms the principle that all individuals associated with the Mines academic community have a responsibility for establishing, maintaining an fostering an understanding and appreciation for academic integrity. In broad terms, this implies protecting the environment of mutual trust within which scholarly exchange occurs, supporting the ability of the faculty to fairly and effectively evaluate every student’s academic achievements, and giving credence to the university’s educational mission, its scholarly objectives and the substance of the degrees it awards. The protection of academic integrity requires there to be clear and consistent standards, as well as confrontation and sanctions when individuals violate those standards. The Colorado School of Mines desires an environment free of any and all forms of academic misconduct and expects students to act with integrity at all times.

Academic misconduct is the intentional act of fraud, in which an individual seeks to claim credit for the work and efforts of another without authorization, or uses unauthorized materials or fabricated information in any academic exercise. Student Academic Misconduct arises when a student violates the principle of academic integrity. Such behavior erodes mutual trust, distorts the fair evaluation of academic achievements, violates the ethical code of behavior upon which education and scholarship rest, and undermines the credibility of the university. Because of the serious institutional and individual ramifications, student misconduct arising from violations of academic integrity is not tolerated at Mines. If a student is found to have engaged in such misconduct sanctions such as change of a grade, loss of institutional privileges, or academic suspension or dismissal may be imposed.

The complete policy is online.

Coursework Return Policy: Course staff will endeavour to return graded materials within two weeks.

Absence Policy (e.g., Sports/Activities Policy): Attendance and participation are mandatory. Please notify the instructor of any planned absences.

Homework:

- Homework assignments are due at the beginning of class on the given due date.
- You may turn in one homework assignment up to three days late, no questions asked. Consider this a “life happens” clause.
- Exams: If you will be absent during a scheduled exam, you should schedule a make-up time before you leave.

Disability Support Services - The Colorado School of Mines is committed to ensuring the full participation of all students in its programs, including students with disabilities. If you are registered with Disability Support Services (DSS) and I have received your letter of accommodations, please contact me at your earliest convenience so we can discuss your needs in this course. For questions or other inquiries regarding disabilities or academic accommodations, I encourage you to visit disabilities.mines.edu for more information.

Discrimination, Harassment and Title IX - All learning opportunities at Mines, including this course, require a safe environment for everyone to be productive and able to share and learn without fear of discrimination or
harassment. Mines’ core values of respect, diversity, compassion, and collaboration will be honored in this course (More information can be found here) and the standards in this class are the same as those expected in any professional work environment. **Discrimination or harassment of any type will not be tolerated.** As a participant in this course, we expect you to respect your instructor and your classmates. As your instructor, it is my responsibility to foster a learning environment that supports diversity of thoughts, perspectives and experiences, and honors your identities. To help accomplish this:

- Course rosters are provided to the instructor with the student’s legal name. I will honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records.
- If something is said or done in this course (by anyone, including myself) that made you or others feel uncomfortable, or if your performance in the course is being impacted by your experiences outside of the course, please report it to:
  - Me (if you are comfortable doing so)
  - Wellness Center- Counseling ([https://www.mines.edu/counseling-center/](https://www.mines.edu/counseling-center/))
  - Speak Up ([https://www.mines.edu/speak-up/](https://www.mines.edu/speak-up/))- Anonymous Option

In this course, we will cultivate a community that supports survivors, prevents interpersonal violence, and promotes a harassment free environment. Title IX and Colorado State law protects individuals from discrimination based on sex and gender in educational programs or activities. Mines takes this obligation seriously and is committed to providing a campus community free from gender and sex-based discrimination. Discrimination, including sexual harassment, sexual violence, stalking, and domestic violence, is prohibited and will not be tolerated within the Mines campus community. If these issues have affected you or someone you know, you can access the appropriate resources here: [http://www.mines.edu/title-ix/](http://www.mines.edu/title-ix/). You can also contact the Mines Title IX Coordinator, Karin Ranta-Curran, at 303-384-2558 or krcurran@mines.edu for more information.

It's on us, all of the Mines community, to engineer a culture of respect

**Grading Procedures:**

The weighting of the final grade will be determined as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Exam 1</td>
<td>20%</td>
</tr>
<tr>
<td>Exam 2</td>
<td>20%</td>
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<tr>
<td>OPEC Strategy Game</td>
<td>15%</td>
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<tr>
<td>Electricity Strategy Game</td>
<td>15%</td>
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<tr>
<td>Climate Treaty Game</td>
<td>15%</td>
</tr>
<tr>
<td>Homework</td>
<td>15%</td>
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Exams 1 and 2 will be closed-note, closed-book, in-class exams tentatively scheduled for the 5th and 10th weeks of class.

There will be about 4 homeworks - one each for micro and market power, oil and gas, electricity, and environment. Students are encouraged to work together on homework assignments, but you must turn in your own work. If you have questions about the distinction, I’m happy to discuss before submittal. The homeworks will be due at the beginning of class on the assigned due dates.

Each game will be done in groups, generally of 3-4. You will be evaluated both on how well your team does in the game (did you win?), on papers/memos explaining your strategy and performance, and on quality of participation.

**OPEC Game:** The OPEC game is a series of simulations of the world oil market. In the first stage of the game there are 7 independent producers, each of which has to make an independent strategic output
decision. In the second stage, the 7 independent producers are allowed to meet and attempt to form a cartel.

**Electricity Strategy Game:** The Electricity Strategy Game (ESG) is an electricity market simulation in which each utility owns a portfolio of generation units and bids those units into an electricity market.

**Climate Treaty Game:** Each team will represent a single country, and have different needs and goals for a treaty to address climate change.

**Detailed Course Schedule:**

**Part 1. Microeconomic Refresh and Market Power Issues**

8/20 – 8/29

- Economic efficiency
- Monopolistic outcomes
- Oligopsony outcomes

**Part 2. Oil and Gas Markets**

9/3 – 9/24

Sept 12– class cancelled for career day

Sept 19 – class cancelled (Maniloff travel)

- Introduction to Oil and Natural Gas Markets
- Pricing and Extracting Exhaustible Resources
- Resource Production & Local Communities
- Introduction to OPEC Strategy Game
- The Economic Role of Energy Transportation
- The Economics of Energy Storage
- OPEC cartel meeting
- Commodities and Futures Markets
- Related transportation policies
- OPEC Game

*September 26th, Midterm Exam # 1, covers microeconomics and oil and gas markets*

**PART 3: Electricity Markets**

10/1 – 10/17

- Introduction to electricity sector in U.S.
- Electricity Restructuring
- Nuclear power
- Renewable power
- Energy efficiency
- Introduction to the Electricity Strategy Game

*October 24th, Midterm Exam #2, covers electricity markets*

**PART 4: Environmental Policies for Energy Markets**

10/22 – 12/03

Nov 7 – class cancelled (Maniloff travel)
• Environmental Externalities in Energy Markets
• Emissions Trading
• Climate Change Policy
• Policies for Renewable Fuel
• Energy Issues in CO
• Energy Markets in the Developing World
• Auction Design