

Syllabus EC438/538 Fall 2021

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Course Description

The official description of the course is:

Economics and structure of energy markets, with a focus on electricity. Examines current policy issues arising from energy production and use.

This is a companion course to EC 437/537 which will address regulatory and competitive policies in electricity, public transportation, water, natural, and telecommunications. The order of the courses has changed to reflect the evolving nature of the field.

I provide two paths through this course. The first path focuses on a term paper. The second is more focused on classroom discussion and exams.

The term paper path requires some qualification steps. If quality and progress are not sufficient to produce a reasonable term paper, you will be shifted back to the second, more traditional path with significant make up work in the later half of the course.

Prerequisites

The undergraduate section has microeconomic theory, EC 311, or the calculus based version, EC 415, listed as prerequisites. The graduate section requires only graduate standing.

Technology Requirements

It is assumed that you can access the class via zoom and have a functioning web browser that can access google docs. The slides are interactive and assume you have some kind of touch or pseudo-pen. You could use your finger and your phone (which works but I would not recommend), a computer with a touch screen, or even a small \$30 Wacom tablet.

The technology requirements are your responsibility.

COVID-19

The PSU campus is set to open with all students and faculty vaccinated and that everything will go back to normal.

If they mentioned a pony – I missed it. We will take the more prudent approach and plan for quarantining and heterogeneous response to the vaccine. In other words, we are planning for breakthrough infections and some people having a less effective response to the vaccines.

Health and Safety

Viri mutate. Large parts of the world, parts of our state, and many sub-populations, e.g., children, are unvaccinated. This gives rise to new strains and the *possibility* that our current vaccines are less effective against these emerging strains than the existing ones.

I will be applying an abundance of caution and planning for the possibility of another move to fully remote learning as Fall continues. In the mean time I will set up the class so you can join remotely or in-person.

We will also be following a few simple practices:

- Monday office hours will generally be held in covered rooftop area on the fourth floor of the Urban Center Building as long as weather permits. I'll be easy to spot.
- Tuesday office hours will be online only.
- Wear a mask in class or join remotely.

Contact Information

Communication will be handled through slack <http://woodseconomics.slack.com/>. You should have received an invitation, if not, just go to that URL and use this link () and your @pdx.edu email to sign up. There are reasonable help documents to get you started (<https://get.slack.help/hc/en-us/articles/218080037-Getting-started-for-new-users>)

Slack will be used for IM, email and forum style communication. It even handles phone and video calls. If you have a question about course material or the course itself, ask in one of the channels, e.g., #general. If you have a personal message that is not intended for others, send a direct message, i.e., @woodsjs.

Office Hours:

- Office hours are Monday 3:30-5:30pm and Tuesdays 10:00-11:30 not including final exam week, on zoom only.
- You can schedule one-on-one meetings at <https://woodsjs.youcanbook.me/>. These will be online meetings through zoom.

Basis for Grade

The two paths through the class have many of the same requirements but very different emphasis. Previously the term paper was mandatory but last year a larger number of students simply never completed a term paper.

Unless you opt-in to writing a term paper and show satisfactory preparation and performance, you will be on the Discussion and Exams path.

Early in the term you will have the option of doing some preliminary work to demonstrate your ability to write a term paper and construct a viable topic. These are the small writing sample and abstract assignments listed below. If you demonstrate your preparation and propose a reasonable topic, you are on the term paper track.

This path has multiple check-in points and as long as you are making satisfactory progress you will continue on this path. If you get too far behind or the quality of the interim product is low, I will unilaterally shift you back to the Discussion and Exams Path with additional make up work.

Basis for Grade: Discussion and Exams

Course grades will be determined by your performance as both a creator of table reads, briefly explained below but expanded later, your participation in those table reads, homework assignments, a midterm and a final. In short, with the exception of the table read, it is a traditional class set up.

The proportion of your grade from each task is defined below.

- Table Read Creation and Leadership: 30%
- Table Read Participation: 10%
- Homework: 20%
- Midterm (Oct 27): 20%
- Final (Dec 9, 12:30-2:20) : 20%

Homework will be irregular but significant. Please do the homework. The number of half, and frankly really bad, answers from chegg, course hero and google searches skyrocketed last year. I'm not interested in giving feedback on found answers. If your answer looks found, I'll skip it. If there is not enough information to see what you did, skipping too many steps, I'll skip it.

Basis for Grade; Term Paper

Some students may wish to spend the majority of the term doing a deep dive on a topic of their choice or producing a technical writing sample or a paper that can be delivered at an academic conference.

I have paid the conference fees for students to present.

- Table Read Participation: 15%
- Final Draft of Term Paper: 20%
- Draft Term Paper: 25%
- Presentation of Paper Topic: 15%
- Annotated Bibliography: 23%
- Abstract: 1%

- Writing Sample: 1%

These students are still required to be present in class and to have read the material. Note that some of the grade is based on table read participation.

Students that are taking this path start by submitting a writing sample with a bibliography and citations from a previous class. If the writing is of passable quality you will be allowed to construct a draft abstract.

Once your abstract is submitted we will meet to re-frame to topic into something reasonable for a 10-week course and your skill set.

The annotated bibliography is the key step. This should be your first outline of your paper. It should include most of your key references and describe how you will use them in your paper. If you don't demonstrate sufficient progress and organization at this stage, you will be transitioned back to discussion and exams.

If there is a good start, then you can proceed and we can schedule an in-class presentation on your interim work.

Please note that the draft paper is worth more than the final draft. The draft paper should be mostly complete but lacking a little polish.

Transitioning Back to Discussion and Exams

Some students will start down the term paper path and find that it isn't for them, either because they were too optimistic, their time constraints have changed, or the project is just not working.

You can voluntarily transition back right after the annotated bibliography. I may force you back onto the discussion and exam path if your progress is insufficient.

Your basis for grade will become:

- Abstract: 1%
- Writing Sample: 1%
- Table Read Creation and Leadership: 23%
- Table Read Participation: 20%
- Homework: 15%
- Midterm (Oct 27): 20%
- Final (Dec 9, 12:30-2:20) : 20%

There will also be some reworking of the table read assignments. Those that continued on the exam path will have fewer assignments to allow those that did not have table read assignments, while they worked on term papers, to catch up.

If you are transitioning back to the exam path from the term paper path, plan on a very serious workload commitment in the later half of the class to catch up.

To be clear, transitioning away from the term paper is much harder than completing it or never starting.

Which Path?

Students have a much wider range of preparation than in the past. Even with the same classes, students arrive with vastly different experience, abilities and skill sets.

Pick what works for you, but don't focus on strategic short-term advantages. It is very easy to start on the term paper path, get behind, and then have to transition back to the exam path at the end of the term just as your other classes are ramping up.

Sticking with one option is easy.

What Ifs

- Q: What if I am on the *term paper* system and I get sick? A: It depends on how severe it is. If it is something mild, less than two weeks, we can adapt. If it is severe, longer than two weeks, you can make a deadline appeal <https://www.pdx.edu/registration/DAC>. You must send documentation, but it removes the course from your transcript and gets you your money back.
- Q: What if I am on the *exam based* system and I get sick on exam day? A: It depends on how severe. If you can work, but should not be on campus, take the exam remotely. If it is more severe than that, you can do one, and only one, *make-up exam on November 24th*. If you are sick on make-up exam day and have a passing grade, we can give you an incomplete, if not, you can make a deadline appeal <https://www.pdx.edu/registration/DAC>. You must send documentation, but it removes the course from your transcript and gets you your money back.

The In-class Experience

My goal is to make this work if you are physically in the classroom or remote but it won't work when you are asynchronous. Catching up on videos may help with exams and homework but it will not help with your table read participation.

Table Reads

There is a longer explanation of the table reads

Exam Days

For those on the exam path, there is both a midterm and a final exam in this class. The questions will require you to synthesize what you have learned, comparing and contrasting, using models and data from multiple sources to support your argument.

These are open-note, open-book exams, but that should indicate that these are more difficult questions. Don't expect to burn through some algebra problems. If you are familiar with Costa's levels of inquiry, these are level three questions. The homework will tend to be level two and one.

A set of potential questions will be pinned in slack. Only a subset or variation of the questions will be chosen for the exam.

On exam day a Google doc will be shared with you. You should complete your work in that document. If you need to include diagrams or mathematical derivations and don't want to spend the time you can do those on paper, take a photo and upload it to the associated D2L assignment folder. Each photo should be labeled, e.g., figure 1, with corresponding text in your Google doc to indicate where the figure should be included.

As per normal, exams are intended to measure individual performance. The work you turn in should be authentically yours. Communication between students during the exam is not allowed.

Participatory Grading

The graduate assistant and I will be grading the bulk of the homework, exams, term papers and the like but you will have input on a few grades.

Students producing a term paper have to perform a presentation. You will be asked for feedback on their presentation.

Since multiple students will be assigned the same sections of papers and textbook for table reads, the easiest way to grade is based on the relative quality of the material.

Each of you will have a single vote per section. The instructor will have 2 or 3 depending on the size of the class. Grades will be determined by an instant runoff vote.

Textbook and Other Resources

The course is classically organized by fuel but I have rearranged the topics as they relate to more current issues.

- The death of coal? Why we started using coal? Who is still using coal and why. SOx trading. The rise of cheap natural gas and combined cycle natural gas in electricity generation. Where PV, wind, coal, nuclear fit in electricity dispatch.
 - Dahl, Ch 3
 - Culver, Walter J., and Mingguo Hong. "Coal's decline: Driven by policy or technology?." *The Electricity Journal* 29.7 (2016): 50-61. <https://stats.lib.pdx.edu/proxy.php?url=https://www.sciencedirect.com/science/article/pii/S104061901630121X>
- Covert, Thomas, Michael Greenstone and Christopher R. Knittel. 2016. "Will We Ever Stop Using Fossil Fuels?" *Journal of Economic Perspectives*, 30(1): 117-38. <http://stats.lib.pdx.edu/proxy.php?url=https://www.aeaweb.org/articles?id=10.1257/jep.30.1.117>

- What is up with Texas?: The basics of electricity generation, transmission and distribution. Deregulation. Markets for power. Markets for transmission. Untangling the ERCOT heatwave and coldwave reaction.
 - Federal Energy Regulatory Commission. “Energy primer: A handbook of energy market basics.” Federal Energy Regulatory Commission: Washington, DC, USA (2015). p. 35-65, <https://www.ferc.gov/sites/default/files/2020-05/energy-primer.pdf>
 - Busby, Joshua W., et al. “Cascading risks: Understanding the 2021 winter blackout in Texas.” Energy Research & Social Science 77 (2021): 102106. <https://www.sciencedirect-com.proxy.lib.pdx.edu/science/article/pii/S2214629621001997>
 - Dahl, Ch 5
 - Dahl, Ch 6
- Carbon, the new energy market
 - Basics for beginners
 - How do you do Cost Benefit analysis with future generations. I thought everyone liked pizza.
 - Complications is implementing carbon cap and trade or taxes.
 - The EU
 - China
 - How did we screw this up?
- Transportation electrification
 - The rise of cars and the infrastructure of cars.
 - The 70s
 - Markets for oil, oil prices and oil demand.
 - The electric car
 - What does EV infrastructure look like?
- What does the future look like? Shakes magic 8 ball.
 - Distributed generation and storage.
 - Its an EV. Its a battery. Its both.
- Rural and other electrification efforts
 - US rural electrification and our electricity technology
 - Lights! Education! Health! But, for who?
 - DC networks and distributed generation
- PNW
 - IOUs, PUDs and our old-school cost of service regulation
 - The edge of the CAISO, the energy imbalance market
 - Bonneville Power Administration, hydro power and international treaties