

Syllabus EC438/538 Fall 2022

James Woods

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 course is a companion 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.

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

You should have access to a functioning web browser in class so you can use Google Docs using your @pdx.edu account. A touch or pseudo-pen interface can be very useful.

The technology requirements are your responsibility.

Health and Safety

While we are ‘over’ COVID-19, it does not mean everything will return to the way it was. I will continue to organize this course as an **Attend Anywhere** course with the option to join via zoom.

If you are sick, not just COVID, please attend via zoom, or at least wear a mask. If I get sick, our class meetings will move to zoom, or I’ll cancel class until I improve. As usual, recordings of all zoom meetings will be available on canvas.

Contact Information

We will handle course communication through slack <http://economicswithwoods.slack.com/>. There is an invite link on the Canvas homepage for this course. Use 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 allows for IM 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., #energy_general_fall_2022. If you have a personal message not intended for others, send a direct message to @woods.j.

Office Hours:

Office hours, where I or the GA, Katherine, will be active on Slack to answer questions via text, voice, or video, are scattered throughout the week in the attempt to make at least one convenient for you. I will respond on Slack at other times, but I will not respond immediately.

You can schedule one-on-one meetings at <https://woods.j.youcanbook.me/>. These will be online meetings through zoom.

Basis for Grade

The class is divided into three workflows:

- *Daily Work* (40%) learning, reading, writing about, and discussing energy economics topics;
- *Exams* (20%), where you make the case that *you* have thought about the material on a more than a superficial level, and
- *Term Paper* (40%), where you explore a topic that interests you and produce a writing sample.

Daily Work

Your daily work is predicated on reading being the fastest way to learn. You may prefer videos or some other media. Still, until we start using AI-directed learning, the written word alone allows you to speed up, slow down, skip, edit, and personalize the scale and scope of your attention.

Ideas take time to grasp. They need to settle for a while before you can connect those new ideas to things you already learned. Likewise, reading needs to take place over time, need to return to your thoughts to advance your understanding.

It also helps to interact with people trying to grasp the same ideas. Each of you gets a piece of the puzzle, and when you put your pieces together, you get a better sense of the whole.

About a week before class I will share a Google Doc with you that gives you a reading and writing assignment that will be shared without attribution with the class. These will generally

require a brief summary, a longer explanation of an argument, or for you to assemble data that we will use in class. I will take what you have at 5 pm the day before class and assemble them into one shared document.

This shared document is the Table Read Creation part of your grade. Students will evaluate the work product and vote on quality which counts for part of your grade for table read creation. I'll provide the other component.

Daily Work (40%):

- Table Read Creation: 20%
- In-class Participation: 20%

Once we read the document and evaluate the work quality, we will move to our more active discussion.

Students will break into groups and appoint a scribe to summarize the in-class discussion. Those joining via zoom should volunteer for the scribe role.

I'll randomly assign each group a discussion question. You will document your discussion and conclusions with data, mathematical and graphical arguments. The scribe will then share out the conclusions of the group.

Each class session will end with each group voting on the best contributor in the group as part of the in-class participation grade.

Exams

This course has a midterm and a final exam. The questions will require you to synthesize what you have learned, compare and contrast, and use models and data from multiple sources to support your argument.

Exams (20%):

- Midterm (Nov 3): 10%
- Final Exam (Dec 8 10:15-12:05): 10%

These are open-note, open-book exams. That should indicate that these are more difficult exams rather than easier closed-note exams. Don't expect every question to be a superficial burn through some math problems. If you are familiar with Costa's levels of inquiry, these are level three questions.

I will keep a document of potential questions pinned in Slack. It is in your best interest to prepare to answer those questions. Preparation could be an outline or full text. It is not a good idea to walk in unprepared.

I will share a Google doc and a Jamboard with you on exam day. You should complete your work in those documents.

If you need to include diagrams or mathematical derivations and don't want to spend the time typing or using the draw function, you can do those on paper, take a photo and embed

them in the document, or use the Jamboard. If you are using Jamboard, indicate in the Google Doc the page of the Jamboard so I know where to look.

Exams measure individual performance. The work you turn in should be authentically yours. Communication between students during the exam is not allowed.

Term Paper

Your term paper is a larger project that requires nearly continuous work over the term. It is not the kind of project you should envision starting and completing in a few days. I will have additional advice as part of a survival guide to upper-division classes that will be published elsewhere.

I've broken down the term paper process into much smaller pieces to ensure that you are progressing well. The exact due dates are published in canvas. They each have separate deadlines.

Term Paper (40%):

- Draft Abstract: 2%
- Final Abstract: 3%
- Draft Bibliography: 5%
- Annotated Bibliography: 8%
- Draft Presentation: 2%
- Presentation: 3%
- Draft Term Paper: 10%
- Final Term Paper: 5%
- Response to Referee Report: 2%

Before you turn in your abstract, we will take a look at some recent publications in the major energy economics journals:

- Energy Economics <http://www.journals.elsevier.com/energy-economics/>
- The Energy Journal <https://www.jstor.org/journal/energyj>
- Resource and Energy Economics <http://www.journals.elsevier.com/resource-and-energy-economics/>
- Energy: The International Journal <http://www.journals.elsevier.com/energy/> This has economics and engineering
- Energy Policy <http://www.journals.elsevier.com/energy-policy/>
- Utilities Policy (for more electricity-focused reading) <http://www.journals.elsevier.com/utilities-policy/>

You should look through the titles and abstracts of these papers to see if something gets your attention. Then, pick a topic that appeals to you. Don't make yourself miserable by choosing a topic you don't have an interest in or dislike.

Unless you are performing original empirical research, which you should try if you have taken EC 469, you will only be completing a literature review. The review will:

- Be between 10 and 15 pages long, not including figures, tables, bibliography, etc.
- Make meaningful use of at least eight references from refereed journals.

The easiest way to learn what is in a literature review is to look at some published examples. A quick google scholar search gives a long listing (https://scholar.google.com/scholar?hl=en&as_sdt=0%2C38&as_vis=1&q=%22energy+economics%22+literature+review&btnG=).

Looking at Greening, Lorna A., David L. Greene, and Carmen Difiglio. “Energy efficiency and consumption—the rebound effect—a survey.” *Energy policy* 28.6 (2000): 389-401 (<http://www.sciencedirect.com.proxy.lib.pdx.edu/science/article/pii/S0301421500000215>), which jumped out at me as interesting.

The paper has a solid outline. It starts with an introduction to the problem and then discusses the typology of rebounds. They figured out that authors were using “rebound effect” differently, and part of the difference in the conclusions was because they were using the same word for many different concepts. They also noted that the authors connected “rebound effects” to other concepts differently.

They were making the papers talk to each other about how their definitions and scope differed. That is something you could not get from reading the articles individually. They are all about the rebound effect, but each talks about a slightly different one.

The empirical evidence section is subdivided logically by end-use, e.g., space heating, and then provides tables summarizing how the data and analysis differ across papers.

Table 1 summarizes methods, sample size, effect size, and the existence of control groups. Table 2 gives the years of data, effect size, and the scope of data. They use the tables to frame the discussion that follows. In each case, they explain why the papers produced different empirical results and give reasons for the similarities when they exist.

You can see very similar patterns in the other literature reviews.

A literature review is not a simple recitation, paper after paper, repeating what each said. They need to add something. They need to provide the conversation linking the papers as if the authors were debating each other.

The term paper deliverables are listed below. There will be additional details in class and on canvas.

1. Submit a *Draft Abstract*. Provide a maximum 300-word abstract for your term paper. The term paper will eventually be between 10 and 15 pages long and make good use of at least eight articles from economics journals in the energy area. Get narrow as soon as possible.
2. Schedule a 20-minute review meeting with the instructor to discuss scope and depth changes to your abstract. Again, there are links for this in canvas, slack, and in the syllabus. I am clearing extra time that week for these meetings.
3. Submit a *Final Abstract*. There are likely some changes after this, but there should be fewer changes, and no wholesale topic changes, after this point.

4. Submit a *Draft Bibliography*. Provide at least ten journal articles you intend to use and your lesser supporting references. This should be in a standard bibliographic format.
5. Submit an *Annotated Bibliography*. An annotated bibliography is a two to three-page outline of the arguments you will make, the tables you will create, and how you will use the references in your term paper. The annotation on each paper is not a replication of the abstract.
6. Submit a *Draft Presentation*. These are due the same day for everyone. I will grade the version you upload, not what you present. I will distribute your abstract and annotated bibliography before then so you can spend less time framing your presentation.
7. Submit a *Draft Paper*. Your paper should be a well-polished, logical extension of your work to date. The spelling, grammar, and Turnitin report should be very clean. The draft paper is worth more than the final paper.
8. Submit a *Final Paper*. This is the final submission. You should address all comments made in the referee report on the draft paper.
9. Submit a *Response to the Referee Report*. This is a written response to the referee report and should address the suggestions, bullet-point-by-bullet-point, indicating how you handled the issue in your final draft. Again, this can be very long if your draft is in poor shape.

Textbook and Other Resources

The main text for the course is Bhattacharyya, Subhes C. Energy economics: concepts, issues, markets and governance. Springer Nature, 2019. It was chosen for undergraduates and illustrates many of the concepts they learned in EC 311/415 and EC 201, focusing more on graphical treatments of the ideas.

The textbook author intended it to be a reasonably comprehensive, primarily non-technical, overview of a sprawling and ragged field. Please note that many of the papers in the major journals don't fit in the chapters. For example, the effects of energy consumption on land values, labor outcomes, and health are not addressed in the textbook, but you may want to investigate those topics in your term paper.

We will focus on a few core topics, with the class voting on the remaining topics depending on interest.

Core Topics:

- Introduction to Energy Economics (Ch 1): Brief introduction to the topic.
- Energy Data and Energy Balance (Ch 2): Introduction to some units and energy balances. Please note that the units are often oddly expressed in a mix of SI, US customary, and equivalents. Energy balance diagrams also have some quirks, including how much energy is used to produce energy.

- Energy Demand Analysis (Ch 3.1-3.6): This is the link to EC 311/415/201. Please review your notes from these classes. The final part of the chapter may be interesting to those that have taken Econometrics, EC469.
- Sectoral Energy Demand (Ch 4): We will use this chapter mainly as a gateway to learning about data sources.
- Economic Analysis of Energy Investments (Ch 6): This is a brief version of part of EC 427 or EC 314.

After we complete the core topics, we will vote on the following topic. I will add outside readings that bring the topics up to date and emphasize that this is an upper-division economics course as opposed to a lower division or non-economics course.

Theory Options: We should choose one of these

- Energy Supply Development (Ch 7 and 8): This is about the decision to dig, drill, and install solar panels and wind turbines using the time-value of money.
- Energy Pricing and Taxation (Ch 9): Single period analysis

Broad Topic Options: These are multichapter options. We will likely only address one of these with the remaining topics determined by term paper choices.

- Externalities and Climate Change (Ch 10, 11, 18, 19)
- Markets (Ch 21, 22, 24, 25)

We can and will address other topics through our term papers.

Writing Resources

McCloskey, D. (2000). *Economical writing* (Second ed.). Prospect Heights, Illinois: Waveland Press. This is an excellent read on how to write. There are 31 short, snarky chapters in 91 pages. Read a chapter a day and try to apply what you read. There are later versions, but this one is the most fun and easiest to find.

Chapter 19 in Wooldridge's, "Introductory Econometrics: A Modern Approach". It is an excellent outline of the process of empirical research. Graduate students and those attempting an empirical paper should read this before choosing a topic for their term paper. There are usually a few copies floating around the department.

In addition to these resources, I highly recommend using a tool, e.g., Grammarly (<https://www.grammarly.com>), and stopping by the writing center (<https://www.pdx.edu/writing-center/>) before turning in drafts.

Policy Statements from the University

- **PSU Grading System Undergraduate:** <http://pdx.smartcatalogiq.com/2021-2022/Bulletin/Undergraduate-Studies/Grading-System-for-Undergraduates>

- **Drop/Withdraw Deadline:** <http://pdx.smartcatalogiq.com/en/2021-2022/Bulletin/Academic-Calendar>
- **Academic Integrity:** Academic integrity is a vital part of the educational experience at PSU. Please see the PSU Student Code of Conduct for the university's policy on academic dishonesty. A confirmed violation of that Code in this course may result in failure of the course.
- **Incomplete Policy:** Students do not have a right to receive or demand an Incomplete grade. The option of assigning an Incomplete grade is at the discretion of the instructor when the following criteria are met. Eligibility Criteria:
 1. Required satisfactory course completion/participation.
 2. Reasonable justification for the request.
 3. Incomplete grade is not a substitute for a poor grade.
 4. Written agreement. (See Incomplete Contract)
 5. Resolving the Incomplete.
- **Student Services Disability Access Statement:** If you have, or think you may have, a disability that may affect your work in this class and feel you need accommodations, contact the Disability Resource Center to schedule an appointment and initiate a conversation about reasonable accommodations. The DRC is located in 116 Smith Memorial Student Union, 503-725-4150, drc@pdx.edu, <https://www.pdx.edu/disability-resource-center/>.
- **Safe Campus Statement:** Portland State University desires to create a safe campus for our students. As part of that mission, PSU requires all students to take the learning module entitled Creating a Safe Campus: Preventing Gender Discrimination, Sexual Harassment, Sexual Misconduct and Sexual Assault. If you or someone you know has been harassed or assaulted, you can find the appropriate resources on PSU's Enrollment Management & Student Affairs: Sexual Prevention & Response website at <http://www.pdx.edu/sexual-assault>
- **Student Food Security :**Any student who has difficulty affording groceries or accessing sufficient food to eat every day, or who lacks a safe and stable place to live, and believes this may affect their performance in the course, is urged to contact Committee for Improving Student Food Security for support at foodhelp@pdx.edu. Furthermore, please notify the professor if you are comfortable in doing so. This will enable her to provide any resources that she may possess.
- **Title IX Reporting:** As an instructor, students frequently come to me for assistance in matters that are not related to the course material. Please be aware that PSU's policies require instructors to report any instance of sexual harassment, sexual and relationship violence and/or other forms of prohibited discrimination to University Officials, who keep the information private. If you would rather share information about these experiences with a PSU staff member who does not have these reporting responsibilities and can keep the information confidential, please contact one of the following campus resources.

- Confidential Advocates: 503.894.7982, or by scheduling online (for matters regarding sexual harassment and sexual and relationship violence)
 - Center for Student Health and Counseling (SHAC): 1880 SW 6th Ave, 503.725.2800
 - Student Legal Services: 1825 SW Broadway, (SMSU) M343, 503.725.4556 For more information, please complete the required student module Understanding Sexual Misconduct and Resources in D2L. PSU Sexual Misconduct Response website gives you comprehensive information about how to support and/or report an incident. Please complete the required student module Understanding Sexual Misconduct and Resources, which provides information about PSU policy and resources.
- **Cultural Resource Centers:** The Cultural Resource Centers (CRCs) create a student-centered inclusive environment that enriches the university experience. We honor diversity, explore social justice issues, celebrate cultural traditions, and foster student identities, success, and leadership. Our centers include the Multicultural Student Center, La Casa Latina Student Center, Native American Student & Community Center, Pan African Commons, Pacific Islander, Asian, Asian American Student Center and the Middle Eastern, North African, South Asian program. We provide student leadership, employment, and volunteer opportunities; student resources such as computer labs, event, lounge and study spaces; and extensive programming. All are welcome!
 - **Recording Technology Notice:** We will use technology for virtual meetings and recordings in this course. Our use of such technology is governed by FERPA, the Acceptable Use Policy and PSU's Student Code of Conduct. A record of all meetings and recordings is kept and stored by PSU, in accordance with the Acceptable Use Policy and FERPA. Your instructor will not share recordings of your class activities outside of course participants, which include your fellow students, TAs/GAs/Mentors, and any guest faculty or community-based learning partners that we may engage with. You may not share recordings outside of this course. Doing so may result in disciplinary action.
 - **Turnitin:** Students agree that by taking this course all required papers may be subject to submission for textual similarity review to Turnitin.com for the detection of plagiarism. All submitted papers will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers. Use of Turnitin.com page service is subject to the Usage Policy and Privacy Pledge posted on the Turnitin.com site.

Link to this syllabus <https://github.com/woodsjam/Course-Energy-Economics>.