

ARE 2250E
Energy Economics: Sustainable Transitions

Schedule: Monday and Wednesday 10:10am-11:25am

Location: YNG 327

Instructor: Erik Katovich

Office: Young 303A

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Office Hours: Monday 11:30am-12:30pm, Wednesday 1:30pm-2:30pm

Course Description: This course explores the economics of transitioning toward cleaner and more sustainable energy systems. We will examine how societies produce and use energy, the role of fossil fuels and critical minerals, and the growing importance of renewable and green technologies. We will discuss opportunities and challenges associated with decarbonizing electricity generation and energy consumption. Recurring themes will include connections between energy and economic development, environmental and distributional impacts, and the role of public policies. Throughout the semester, you will engage with real-world debates, case studies, and application of concepts from energy economics to understand our rapidly evolving energy system.

Student Learning Objectives: By the end of the semester, students will be able to:

- Critically evaluate the costs and benefits of different energy policies and technologies.
- Participate in and contribute to current economic and policy debates related to energy transitions.
- Interpret and communicate evidence about the energy sector using concepts from energy economics.

Course Website: The Husky CT site will contain the updated syllabus, reading assignments, class schedule and due dates. Please check this site regularly.

Course Materials: Assigned readings will be added on Husky CT throughout the semester. Readings will either be made available for download on Husky CT or accessed by students through the UConn library system. I will typically post lecture slides on Husky CT immediately prior to each lecture.

Participation: Students are expected to read all assigned materials prior to each class, actively participate in class activities and discussions, and complete assignments.

Evaluation:

Final grades will be based on a total of 100 points, with each point equal to 1% of the final grade.

- **In-Class Participation (15 points):** Active participation is expected in all class meetings. This includes contributing to discussions, asking and answering questions, and engaging in in-class activities and debates.
- **Reading Memos (10 points each):** You will complete up to four sets of short essay responses based on assigned readings. Each memo is worth 10 points, and your lowest score will be dropped. Memos will be submitted through Husky CT.
- **Debates (15 points):** Each student will take part in at least one structured, in-class debate on a current energy topic (see weekly schedule for topics). Debates will involve two opposing teams of 2–4 students each. Teams will:
 - Deliver a 3-minute opening statement.
 - Prepare and present a 3-minute rebuttal.
 - Conclude with a 2-minute closing statement.
 - Before and after the debate, non-participating students will vote on which side they support; the “winner” will be the team that shifts the most votes. Each member of the winning team will earn 1 point of extra credit.
 - You can sign up for a specific date and debate position [here](#). You don’t need to personally agree with the side you sign up for – part of the exercise is learning to build strong, persuasive arguments regardless of your own views.

- **In-Class Midterm Exam (20 points):** An in-class exam covering material from the first half of the semester.
- **In-Class Final Exam (20 points):** An in-class exam covering material from the second half of the semester.
- **Current Topics (extra credit):** At designated points during the semester, you may submit a link to a relevant news story through Husky CT along with a paragraph explaining how this story connects to class themes and what your thoughts are on the story. Selected stories will be discussed in class. Students who submit a news story along with thoughtful discussion about it will receive 1 point of extra credit (maximum of 3 points per student during the semester, corresponding to the three current topics discussion sessions).

Grading

- Active participation in class discussions and activities: 15%
- Reading memos: 30% (lowest score is dropped)
- Debate participation: 15%
- Midterm exam: 20%
- Final exam: 20%

Grades will be based on the following scale:

A	94 – 100	C	74 – 76
A -	90 – 93	C -	70 – 73
B +	87 – 89	D +	67 – 69
B	84 – 86	D	64 – 66
B -	80 – 83	D -	63 – 60
C +	77 – 79	F	below 60

The following grade points per credit shall be assigned to grades: A, 4.0; A-, 3.7; B+, 3.3; B, 3.0; B-, 2.7; C+, 2.3; C, 2.0; C-, 1.7; D+, 1.3; D, 1.0; D-, 0.7; F, 0.

Course Outline:

Week 1:

Monday, August 25th: Course introduction

Wednesday, August 27th: The historical energy transition to coal and the industrial revolution

Week 2:

Monday, September 1st – No Class (Labor Day)

Wednesday, September 3rd: Oil and gas production

Week 3:

Monday, September 8th: Impacts of oil and gas extraction in developing countries

Wednesday, September 10th: The shale fracking revolution

Reading Memo #1 due by Sunday, September 14th at midnight (submit through Husky CT)

Week 4:

Monday, September 15th: Are we transitioning away from fossil fuels?

Debate #1 in class on Monday, September 15th: Fracking
Should the US government encourage more fracking, or ban it?

Wednesday, September 17th: Challenges of ending fossil fuels for governments, firms, and workers

Week 5:

Monday, September 22nd: Critical minerals and metals: extraction and supply chains

Wednesday, September 24th: Green industrial policies

Reading Memo #2 due by Sunday, September 28th at midnight (submit through Husky CT)

Week 6:

Monday, September 29th: Electricity generation from wind and solar

Wednesday, October 1st: Integrating intermittent renewables onto the electricity grid

Week 7:

Monday, October 6th: Review session for midterm

Debate #2 in class on Monday, October 6th: Electric Vehicle Tariffs
Should the US government impose tariffs on imported EVs?

Wednesday, October 8th: **In-class midterm exam**

Week 8:

Monday, October 13th: Broader impacts of renewable electricity generation

Wednesday, October 15th: Hydroelectric and nuclear power

Week 9:

Monday, October 20th: **Current topics discussion (submit news stories + discussion for extra credit!)**

Debate #3 in class on Monday, October 20th: Nuclear Energy
Should we invest in new nuclear power generation?

Wednesday, October 22nd: Electricity transmission and grid management

Reading Memo #3 due by Sunday, October 26th at midnight (submit through Husky CT)

Week 10:

Monday, October 27th: Electricity markets and utilities

Wednesday, October 29th: Electricity grids, transmission, and economic development

Week 11:

Monday, November 3rd: Household electricity consumption

Wednesday, November 5th: Industrial electricity consumption and decarbonization of industrial processes

Week 12:

Monday, November 10th: Decarbonizing the transportation sector

Current topics discussion (submit news stories + discussion for extra credit!)

Wednesday, November 12th: Energy poverty and development

Reading Memo #4 due by Sunday, November 16th at midnight (submit through Husky CT)

Week 13:

Monday, November 17th: Energy transition impacts on jobs and skills

Current topics discussion (submit news stories + discussion for extra credit!)

Wednesday, November 19th: Distributional impacts of energy transitions

Debate #4 in class on Wednesday, November 19th: Electric Vehicle Subsidies
Should the government subsidize electric vehicle purchases?

Thanksgiving Break

Week 14:

Monday, December 1st: Climate policy prospects and effects on the energy transition

Wednesday, December 3rd: **In-class final exam**

Late Policy, Exams, and Accommodations

You are expected to submit all work by the specified deadlines. I will accept late submissions without penalty if requests for extensions are made before the due date and the reason for the request is reasonable and deemed acceptable. Work submitted late without prior approval may not be accepted or may be subject to a penalty. Exams are to be taken at the scheduled times. Make-up exams will be granted only in cases of illness, family emergency, or other serious circumstances, and whenever possible, arrangements must be made with me in advance. Students with approved accommodations through the Center for Students with Disabilities must provide their accommodation letters early in the semester so that appropriate exam arrangements can be made.

Use of AI Tools

Artificial intelligence (AI) tools like ChatGPT are not prohibited in this class, and they can be useful for brainstorming, checking your writing, or exploring ideas. However, your work will be graded on originality, quality, and coherence. Simply submitting unedited output from an AI tool will almost certainly result in a poor grade, as it does not demonstrate your own critical thinking or engagement with the material. You are investing a lot of time and money to be in this course, and you should take full advantage of it to develop your knowledge and skills. AI can be a helpful tool, but it can also get facts wrong, invent sources, or provide shallow analysis. Ultimately, you are responsible for your own work, and you own the results.

Technology and Classroom Etiquette

Laptops, tablets, and other devices are welcome in class if used for note taking or activities directly related to our work together. You are required to silence your phone and avoid texting, browsing, or other unrelated

activities during class. Out of respect for your classmates, give your full attention during discussions and debates, and contribute in ways that promote a supportive and engaging learning environment.

Communication and Email

You can reach me most reliably by email (erik.katovich@uconn.edu). I will do my best to respond to messages within 24–48 hours on weekdays. Please write emails professionally, including a clear subject line mentioning 2250E, and be sure to check Husky CT and your UConn email regularly for course announcements and updates.

Office Hours

Office hours are an opportunity for you to ask questions, clarify material, and get feedback on assignments. You are encouraged to come with questions about the readings, debates, or course concepts, or even just to talk through ideas. If you cannot attend scheduled office hours, email me to arrange an appointment.

Policy Against Discrimination, Harassment and Related Interpersonal Violence:

The University is committed to maintaining an environment free of discrimination or discriminatory harassment directed toward any person or group within its community – students, employees, or visitors. Academic and professional excellence can flourish only when each member of our community is assured an atmosphere of mutual respect. All members of the University community are responsible for the maintenance of an academic and work environment in which people are free to learn and work without fear of discrimination or discriminatory harassment. In addition, inappropriate amorous relationships can undermine the University's mission when those in positions of authority abuse or appear to abuse their authority. To that end, and in accordance with federal and state law, the University prohibits discrimination and discriminatory harassment, as well as inappropriate amorous relationships, and such behavior will be met with appropriate disciplinary action, up to and including dismissal from the University. Additionally, to protect the campus community, all non-confidential University employees (including faculty) are required to report sexual assaults, intimate partner violence, and/or stalking involving a student that they witness or are told about to the Office of Institutional Equity (OIE). Please be aware that while the information you provide will remain private, it will not be confidential and will be shared with University officials who can help. An exception to this reporting exists if students disclose information as a part of coursework submitted to an instructor in connection with a course assignment. Even in the absence of such obligation, all Employees are encouraged to contact OIE if they become aware of information that suggests a safety risk to the University community or any member thereof. The University takes all reports with the utmost seriousness. More information, including resources and reporting options, is available at equity.uconn.edu and titleix.uconn.edu.

Students with disabilities: The University of Connecticut is committed to protecting the rights of individuals with disabilities and assuring that the learning environment is accessible. If you anticipate or experience physical or academic barriers based on disability or pregnancy or other special circumstances, please let me know immediately (at the beginning of the semester) so that we can discuss options. Students who require accommodations should contact the Center for Students with Disabilities, Wilbur Cross Building Room 204, (860) 486-2020 or <http://csd.uconn.edu/>.

Academic Integrity: This course expects all students to act in accordance with the Guidelines for Academic Integrity at the University of Connecticut. If you have questions about academic integrity, or intellectual property, you should consult with your instructor. Submitting work that is plagiarized, copied, or improperly attributed will be considered a violation of these guidelines and subject to university disciplinary procedures. Additionally, consult UConn's [guidelines for academic integrity](#).

Resources for Students Experiencing Distress

The University of Connecticut is committed to supporting students in their mental health, their psychological and social well-being, and their connection to their academic experience and overall wellness. The university believes that academic, personal, and professional development can flourish only when each member of our community is assured equitable access to mental health services. The university aims to make access to mental health attainable while fostering a community reflecting equity and diversity and understands that good mental health may lead to personal and professional growth, greater self-awareness, increased social

engagement, enhanced academic success, and campus and community involvement. Students who feel they may benefit from speaking with a mental health professional can find support and resources through the Student Health and Wellness-Mental Health (SHaW-MH) office. Through SHaW-MH, students can make an appointment with a mental health professional and engage in confidential conversations or seek recommendations or referrals for any mental health or psychological concern. Mental health services are included as part of the university's student health insurance plan and also partially funded through university fees. If you do not have UConn's student health insurance plan, most major insurance plans are also accepted. Students can visit the Student Health and Wellness-Mental Health located in Storrs on the main campus in the Arjona Building, 4th Floor, or contact the office at (860) 486-4705, or <https://studenthealth.uconn.edu/> for services or questions.

Accommodations for Illness or Extended Absences

If illness prevents you from participating in class, it is your responsibility to notify me as soon as possible. If life circumstances are affecting your ability to focus on courses and your UConn experience, students can email the Dean of Students at dos@uconn.edu to request support.

Copyright

The lectures, notes, handouts, and displays in this course are protected by state common law and federal copyright law. Because these materials are my intellectual property, you may not record lectures in any form – audio, video, or otherwise – without prior permission. If permission is granted, recordings are for your personal study only and may not be copied, shared, or used for commercial purposes. Students with approved accommodations through the Center for Students with Disabilities who require lecture recordings should provide me with the appropriate documentation and permission will be granted in accordance with university policy.

This course satisfies **Common Curriculum Topics of Inquiry 4 and 5:**

TOI-4 Learning Objectives: Students will be able to investigate how human activities impact Earth systems, examine how Earth systems affect human activities and well-being, assess how human-environment interactions are represented culturally, creatively, or artistically, and how these representations influence attitudes and behaviors, evaluate how public policies, legal frameworks, and/or other social systems affect environmental and social justice, and articulate moral, ethical, and/or philosophical issues regarding the environment.

TOI-5 Learning Objective: Using theories and methods of social scientific or humanistic inquiry, students will be able to critically examine how institutions and values are justified and/or how they relate to political, social, economic, or familial institutions.