

ECO 180 Citizens, Energy, and Sustainability

Spring 2022 Syllabus

Tuesdays & Thursdays 3:30-4:45pm
Estabrooke 130

COURSE INFORMATION

Course Description

This course introduces students to why they should care about energy issues and what they can do about them. Students will get a broad overview of a variety of technical, economic, environmental, and social implications of energy production and use. The course will focus on current U.S. and global energy use and policies as well as alternative energy options. Students will learn how citizens can play a vital role in determining the direction that the future energy system and policies will take. In the course of our lifetime each of us will be asked to make individual energy decisions, including voting on energy-related issues. This course will give you a place to start in understanding the complex tradeoffs associated with sustainable energy decision-making. Students will be required to do readings and watch videos prior to class so they can spend most of the class time engaged in active learning (e.g., discussions, debates, problem-solving, games, presentations, etc).

Undergraduate General Education Requirements: Population and the Environment and Social Context and Institutionsⁱ.

Undergraduate Prerequisites: None

Credits: 3

COURSE DELIVERY METHOD

Mode of Instruction: In-person, flipped

Learning Management System: Google Classroom (class code: **jd5aalz**; invite link: <https://classroom.google.com/c/NDU4MDQzODQ3ODY5?cjc=jd5aalz>)

Preferred Hardware: Computer and online access

FACULTY INFORMATION

Dr. Sharon Klein

Associate Professor

School of Economics

Winslow Hall, Room 305C

207-581-3174

sharon.klein@maine.edu (when sending email to this address, please start the subject line with the course designator (e.g., ECO 180))

Q&A (aka “Office”) Hours: If you have questions about course material or anything else, please visit me in my office or via Zoom (link posted on Google Classroom) on Mondays at 11am – 12pm or Thursdays at 1-2pm; EXCEPT 1/20/22, 1/31/22, 2/21, 3/31. You can also make

an appointment by email if these times do not work with your schedule. Due to my busy schedule, you may need to allow up to 1-2 weeks ahead of time to schedule an appointment

INSTRUCTIONAL MATERIALS AND METHODS

Required Texts: There is no required text for this course. All required readings and videos will be available through the course website in Google Classroom (see link and code above).

Google Classroom will be our main stop for most course content. This is where I will post learning modules, announcements and grades. You will access Google Form quizzes through Classroom as well. Classroom also links to Google Drive (GD) so if you have GD installed on your computer and set up to automatically sync, you can access the Classroom folder for this course directly from your computer's desktop. Alternatively, you can visit your GD through your web browser and find the Classroom folder for this course in there.

Flipped Classroom

This course uses active, inquiry-based, and collaborative learning methods in a "flipped" classroom model to enrich student understanding of the material and help students develop professionally and personally (for more information, watch this [video](#)). You will watch my lectures as videos posted on Google Classroom. Class will only meet in person once a week to allow time for you to do this. I will begin each class with a brief (5-10 min) review or preview of previous or upcoming course material. During the rest of the in-person class period, you will actively engage in discussions, debates, problem-solving, and other activities that help improve your understanding of learning outcomes, problem-solving and critical thinking skills, confidence, retention of information, group collaboration, and many other important aspects of learning. These activities will also help you do well on learning module quizzes and exams and prepare for post-graduation employment. To participate fully in these activities, you must complete the assigned readings, videos, and assignments on time outside of class. Please bring a laptop to class if you have one – it may make some in-class activities easier.

True to the spirit of inquiry-based learning, I may not always give a direct answer to a question but rather encourage students to find the answers on their own. This may seem frustrating and inefficient at times, but finding answers on your own helps you understand concepts at a deeper level and retain information better. I will provide direct answers when necessary, and I will be open about when I am being indirect and why.

COURSE GOAL

The main goal of this course is to expand student understanding of the current energy system, sustainable energy alternatives, and the citizen's role in achieving a sustainable energy future.

INSTRUCTIONAL OBJECTIVES

1. Describe energy production and consumption systems using appropriate units and vocabulary.
2. Identify existing patterns, policies and targets associated with energy consumption and production.
3. Identify options and constraints associated with various methods of alternative energy production, transportation, and use.

4. Discuss the role of the citizen in local, state and national energy policy and other sustainable energy action.
5. Discuss tradeoffs inherent in the selection of energy options.
6. Evaluate the overall sustainability of energy options.

STUDENT LEARNING OUTCOMES

Upon successful completion of this course, students will be able to:

1. Explain, to an audience of mixed energy knowledge, the most pressing sustainable energy-related problems and potential solutions.
2. Evaluate technical, economic, environmental, and social advantages and disadvantages of different energy solutions.
3. Formulate sustainable energy solutions that citizens can help implement and identify specific actions citizens can take to effect these solutions.
4. Find, develop, and/or participate in local sustainable energy solutions.

We will measure these learning outcomes throughout the semester through **learning module quizzes and exams**.

GRADING AND COURSE EXPECTATIONS

Components of Final Grade:

Learning Module Quizzes	70%
Exams	30%

The final semester grade will be the sum of the weighted total of Learning Module Quizzes and Exams and will be assigned as follows:

A (93 or above)	A- (90-92.9)	B+ (87-89.9)	B (82-86.9)
B- (80-81.9)	C+ (77-79.9)	C (72-76.9)	C- (70-71.9)
D+ (67-69.9)	D (62-66.9)	D- (60-61.9)	F (59.9 or less)

Learning Module Quizzes (70%)

A series of weekly learning modules will be posted on Google Classroom. Each module will include a collection of “course material”, including video lectures, readings, other videos, interactive websites, etc. and an **online** quiz. You may use any course materials to help you answer quiz questions, but you may not discuss answers with anyone else – you must answer the questions on your own. **Class meetings will help prepare you for these quizzes, so it is VERY important to regularly attend class.** Learning Module Quizzes must be submitted by the due dates posted on Google Classroom. I understand that unforeseeable life events happen. Therefore, if you miss the deadline, you have until the last day of class to turn in the assignment for 80% of the total possible grade you could have received if you had submitted it on time. Learning module assignments will comprise 70% of the final grade.

Exams (30%)

There will be one Mid-Term Exam and one Final Exam. Exams will be based on the material presented in the Learning Modules. Each exam will be cumulative, covering all of the Learning Modules that came before it. The Mid-Term Exam will cover the first half of the Learning Modules. The Final Exam will cover ALL Learning Modules. You may use any course materials to help you answer exam questions, but you may not discuss answers with anyone else – you must answer the questions on your own. Both exams will be administered **online**, similar to the Learning Module Quizzes but longer. **Class meetings will help prepare you for these exams, so it is VERY important to regularly attend class.** Exams must be submitted by the deadline posted on Google Classroom. I understand that unforeseeable life events happen. Therefore, if you miss the deadline, you have until 3 days after the Mid-Term deadline to earn up to 80% of the total possible grade you could have received if you had submitted it on time. The Final Exam is due at the end of the final exam period, so there is no possible extension on that deadline. Exams will comprise 30% of the final grade.

COURSE POLICIES

Classroom Culture

This class tends to be a mix of students from economics, engineering, environmental science, and other academic backgrounds. In addition to this academic diversity, each student has their own cultural and social backgrounds, lived experiences, family traditions, political leanings, and sets of ethics and values. These differences represent valuable opportunities for us to open our minds to new ideas and ways of thinking and respect different perspectives in our class discussions. I encourage students not to shy away from discussions that involve differences in opinion or disagreements but rather practice demonstrating active listening, constructive feedback, and respectful debating. These are not easy skills to master. We will spend time practicing these skills. We will not find sustainable energy solutions by either mindlessly fighting or, on the other extreme, avoiding conflict. We must learn how to listen, learn, respect, and grow.

Extra Credit

Several extra credit opportunities are available - more information and specific instructions are located in the "Extra Credit" topic area in Google Classroom.

Late/Missed Assignments

I understand that life happens, and I don't want to waste your time or mine discussing excuses and/or valid reasons for missed assignments. For this reason, if you miss any Learning Module quiz deadlines, you may submit the quiz anytime up to the last day of class for a grade up to 80% of what the grade would have been if you had submitted the quiz on time. You can submit the Mid-Term exam up to 3 days late with the same percentage grade adjustment. There is no extension on the final exam – you must submit it by the last day of the final exam period. After these final deadlines, there is no further opportunity to make up missed work.

Communication Policy & Extra Help

Check Google Classroom regularly for announcements, assignments and other communication from me.

If you have a question or need extra help, please do the following **in order**:

- 1) Review the course materials on Google Classroom (i.e., syllabus, instructions, announcements, readings, videos, etc.) and see if there are already answers available in these materials.
- 2) Check the discussion threads surrounding the course materials to see if your question has already been asked and answered.
- 3) If your question has not been asked yet in Classroom, but it may apply to other students, please post your question to the appropriate course material discussion thread and/or ask your question in class so all students can benefit.
- 4) Attend Q&A hours to discuss your question with me or the teaching assistant (TA) in person or over Zoom.
- 5) If you need to schedule a meeting with me outside of regularly scheduled Q&A hours, please send me an email **at least 48 hours ahead of time**. Be aware that depending on my travel and research schedule, I may need more time than this to arrange an individual meeting.

I expect emails from students to the TA and me (and vice versa) to be composed professionally with complete sentences and proper English writing style with no spelling mistakes or cryptic abbreviations (i.e, an email is not a text message), a CLEAR subject line that includes the course designator (e.g., ECO 180) and a clear, concise question. I reserve the right not to respond to emails that don't meet these qualifications.

On weekdays, I will try to respond to emails within a 36-hour turnaround time. I do not check my email on weekends or holidays. I teach other courses, do research, and have a personal life, so please be patient and respectful.

UNIVERSITY POLICIES

Academic Honesty Statement: Academic honesty is very important. It is dishonest to cheat on exams, to copy term papers, to submit papers written by another person, to fake experimental results, or to copy or reword parts of books or articles into your own papers without appropriately citing the source. Students committing or aiding in any of these violations may be given failing grades for an assignment or for an entire course, at the discretion of the instructor. In addition to any academic action taken by an instructor, these violations are also subject to action under the University of Maine Student Conduct Code. The maximum possible sanction under the student conduct code is dismissal from the University.

Students Accessibility Service Statement: If you have a disability for which you may be requesting an accommodation, please contact Student Accessibility Services, 121 East Annex, 581.2319, as early as possible in the term. Students who have already been approved for accommodations by SAS and have a current accommodation letter should meet with me privately as soon as possible.

Course Schedule Disclaimer (Disruption Clause): In the event of an extended disruption of normal classroom activities, the format for this course may be modified to enable its completion within its programmed time frame. In that event, you will be provided an addendum to the syllabus that will supersede this version.

Observance of Religious Holidays/Events: The University of Maine recognizes that when students are observing significant religious holidays, some may be unable to attend classes or labs, study, take tests, or work on other assignments. If they provide adequate notice (at least

one week and longer if at all possible), these students are allowed to make up course requirements as long as this effort does not create an unreasonable burden upon the instructor, department or University. At the discretion of the instructor, such coursework could be due before or after the examination or assignment. No adverse or prejudicial effects shall result to a student's grade for the examination, study, or course requirement on the day of religious observance. The student shall not be marked absent from the class due to observing a significant religious holiday. In the case of an internship or clinical, students should refer to the applicable policy in place by the employer or site.

University Sexual Discrimination Reporting Policy

The University of Maine is committed to making campus a safe place for students. Because of this commitment, if you tell a teacher about an experience of **sexual assault, sexual harassment, stalking, relationship abuse (dating violence and domestic violence), sexual misconduct or any form of gender discrimination** involving members of the campus, **your teacher is required to report** this information to the campus Office of Sexual Assault & Violence Prevention or the Office of Equal Opportunity.

If you want to talk in confidence to someone about an experience of sexual discrimination, please contact these resources:

For confidential resources on campus: **Counseling Center: 207-581-1392 or Cutler Health Center: at 207-581-4000.**

For confidential resources off campus: **Rape Response Services: 1-800-310-0000 or Spruce Run: 1-800-863-9909.**

Other resources: The resources listed below can offer support but may have to report the incident to others who can help:

For support services on campus: **Office of Sexual Assault & Violence Prevention: 207-581-1406, Office of Community Standards: 207-581-1409, University of Maine Police: 207-581-4040 or 911.** Or see the OSAVP website for a complete list of services at <http://www.umaine.edu/osavp/>

University of Maine COVID-19 Syllabus Statement

COVID-19 is an infectious disease caused by the coronavirus SARS-CoV-2. The virus is transmitted person-to-person through respiratory droplets that are expelled when breathing, talking, eating, coughing, or sneezing. Additionally, the virus is stable on surfaces and can be transmitted when someone touches a contaminated surface and transfers the virus to their nose or mouth. When someone becomes infected with COVID-19 they may either have no symptoms or symptoms that range from mild to severe and can even be fatal. During this global pandemic, it is imperative that all students, faculty, and staff abide by the safety protocols and guidelines set forth by the University to ensure the safety of our campus. All students are encouraged to make the Black Bear Cares Pact to protect the health of themselves, the health of others, and the College of Our Hearts Always.

Black Bears Care Pact: <https://umaine.edu/return/black-bears-care/>

Symptom checking: The symptoms of COVID-19 can range from mild to severe, and even people with mild symptoms may transmit the virus to others. Students are encouraged to use the symptom checking app each day before attending class or moving about campus and follow the recommendation prompted within the app. Students should monitor for the following

symptoms daily: fever (temperature >100.4F/38.0C) or chills, new cough, loss of taste or smell, shortness of breath/difficult breathing, sore throat, diarrhea, nausea, or vomiting, or the onset of new, otherwise unexplained symptoms such as headache, muscle or body aches, fatigue, or congestion/runny nose.

Physical distancing: Students need to make every effort to maintain physical distancing (6 feet or more) indoors and outdoors including within classrooms. The University classrooms and physical spaces have been arranged to maximize physical distancing. Follow the traffic patterns outlined in each building and outdoor space to avoid crowding. If students are in an academic setting (i.e. clinical or lab class) that requires them to reduce physical distancing, they should follow the instructor's guidelines.

Face coverings: Students must wear appropriate face coverings in the classroom. Face coverings must be worn in indoor and outdoor spaces on campus unless people are alone in a room with a door closed or when they are properly physically distanced and do not expect someone to approach them. When face coverings are removed people are placing themselves and those surrounding them at increased risk for COVID-19.

Eating and drinking in classrooms: Students may not eat or drink in the classrooms and are encouraged to take their food or drink into areas designated for these purposes where they can maintain 6 feet physical distance from others.

Hand hygiene: Proper hand hygiene is an effective measure to prevent the spread of COVID-19. Students should wash their hands often with soap and water or use a hand sanitizer with at least 60% alcohol, especially after using the bathroom, before eating or drinking, and before and after going to class or university spaces such as the recreation center, library, or dining halls.

Contingency plans: Classes will be held in various formats to offer flexibility, compassion, and empathy during these unprecedented times. Under certain circumstances, students or instructors may need to miss classes or in-person classes may be disrupted. Students are expected to notify their instructor if they are unable to attend an in-person or online class but will not be penalized for missing class due to illness or the need to care for a family member affected by COVID-19. If a disruption occurs, your instructor will provide communication and contingency plans.

What to do if you have or suspect you have COVID-19: If you have symptoms of COVID-19 or have been possibly exposed to someone with COVID-19, you should stay home, not interact with others, and contact your health care provider immediately to be tested for COVID-19. You may not attend in-person classes and should suspend interactions with others until you are tested. Prior to receiving test results you should quarantine in your living area according to the Maine CDC guidelines below. Please follow the guidance of your health care professional regarding testing, quarantine, and isolation during the testing process and potential illness period.

What to do if someone you know has or may have COVID-19: If someone you know or that you have had close contact with (defined by the ME CDC as 15 mins or more within 6 feet or less) has tested positive for COVID-19, you should stay home and quarantine according to the guidance of the ME CDC, contact your health care provider, and continue to monitor for symptoms. You may be required to quarantine and/or be tested for COVID-19 under these circumstances. You may also have been exposed to COVID-19 by someone you do not know, and it is possible that you could be contacted through contact tracing to determine if you were

exposed. Everyone should respond to these confidential questions to ensure the safety of themselves and those around them.

Maine CDC guidelines: <https://www.maine.gov/dhhs/mecdc/infectious-disease/epi/airborne/coronavirus/general-information.shtml>

If you have questions or would like additional information related to the University of Maine COVID-19-specific policies or procedures please use the following sources:

University Webpages: umaine.edu/return and together.maine.edu

COVID-19 Information line: 207.581.2681

Emergency Operations Center Email Contact: umaine.alerts@maine.edu

COURSE SCHEDULE

Please access the most updated Course Schedule on Google Classroom.

Week	Learning Module Title	Feature Energy Source	Class Meeting (normally Tuesdays, except where noted in red font)	Quiz (online) Deadline (normally Thursdays, except where noted in red font)	Instructional Objectives (see syllabus)
1	Introduction to Sustainability and Sustainable Energy	Oil	1/18/22	1/20/22	1,3,5,6
2	Energy Basics	Natural Gas	1/25/22	1/27/22	1,3
3	Energy Trends	Coal	2/1/22	2/3/22	1,2
4	Technical Sustainability Indicators	Solar	2/8/22	2/10/22	1,3,5,6
5	Environmental Sustainability Indicators	Biomass	2/15/22	2/17/22	1,3,5,6
6	Economic Sustainability Indicators	Wind	2/24/22	2/22/22	1,3,5,6
7	Social Sustainability Indicators	Hydropower	3/1/22	3/3/22	1,3,5,6
MID-TERM EXAM (online) DUE MARCH 4					
8	Sustainable Electricity	Nuclear	3/8/22	3/10/22	1,2,3,5,6
Spring Break 3/14-3/18					
9	Sustainable Transportation		3/22/22	3/24/22	1,2,3,5,6
10	Sustainable Heating	Geothermal	3/29/22	3/31/22	1,2,3,5,6
11	Energy Behavior	Energy Efficiency	4/5/22	4/7/22	1-6
12	Energy Poverty & Injustice	Hydrogen	4/12/22	4/14/22	1-6
13	Citizen Action for Sustainable Energy		4/19/22	4/21/22	1-6
14	Course Wrap-Up		4/26/22		all
FINAL EXAM (online) DUE MAY 6					

ⁱ Population and the Environment: help students to understand how humankind interacts with our finite physical and biological environment by addressing:

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- The role of both local and global environmental change on the quality of human life
 - The pervasive role of human population growth on environmental quality and the quality of life, both in industrial and developing countries
 - The influence of cultural, religious, economic, educational and political factors on population growth and environmental quality
 - Possible solutions to the population/environmental problems, which may include the role of technological advancements, a re-examination of educational and political institutions, enlightened reassessment of traditional religious and economic conceptions, and rethinking contemporary Western conception of "the good life"

Social Context and Institutions: focus upon the ways in which social contexts shape and limit human institutions. The specific focus may be upon ways in which social contexts and institutions interact with human values, the role of institutions in expressing cultural values, or the social and ethical dimensions attendant upon particular academic disciplines.