The Hong Kong University of Science and Technology

Energy Policy

PPOL 3210

3 credits

No pre-requisites

Instructor: Professor Kira MATUS

Email: kmatus@ust.hk

Office Hours: Drop-in Thursdays, 3-4pm, Rm 4611D (lift 31/32) or by appointment

TA: Roza SABA rsaba@connect.ust.hk

Course Description

This course addresses two fundamental questions about energy policy: Why and how do governments intervene in energy markets? What do we know about the relationships between government decisions and the economic and environmental performance of energy systems? The class begins with an overview of four major energy-related challenges confronted by policymakers: 1) Climate change and environmental degradation, 2) energy poverty and inequity issues, 3) the global competition for natural resources, and 4) barriers to sustainable energy use and the need for technology innovation. Students are introduced to a variety of policy types through the lens of energy technologies and their historical and ongoing development.

We examine the role of data, models, and uncertainties in energy policy decisions and discuss linkages between energy, climate and technology policy. The primary focus of the course will be international, with some more in-depth discussion of policies in Asia, North America, and Europe.

This class will meet twice a week, for 80 minutes each class. Classes will be a mix of interactive lectures, activities, simulations, and case studies. Students are expected to be actively engaged in classroom activities and discussions.

Intended Learning Outcomes (ILOs)

By the end of this course, students should be able to:

1. Explain the motivations for energy policy making and its key objectives
2. Distinguish socio-economic, technological, and scientific dimensions of current energy debates
3. Understand strengths and weaknesses of key policy assessment approaches
4. Develop and effectively communicate policy-related arguments
5. Understand major challenges and uncertainties in energy policy making

Assessment and Grading

This course will be assessed using criterion-referencing and grades will not be assigned using a curve. Detailed rubrics for each assignment are provided below, outlining the criteria used for evaluation.

Assignment due dates will be posted on Canvas, as will any adjustments. Late work will be penalized. However, in case of emergencies (health, family emergencies, etc…), I will provide reasonable extensions. I

am much more likely to grant those that are asked for *in advance* (when possible – life happens) or as soon as possible after the missed deadline. Also remember, it is better to hand in late and lose a few points, then to never hand it in, and have a 0 averaged in.

Assessments:

[List specific assessed tasks, exams, quizzes, their weightage, and due dates; perhaps, add a summary table as below, to precede the details for each assessment.]

Assessment Task	Contribution to Overall Course grade (%)	Due date
Country policy memo	15%	30/10/2026
Simulation prep book (group) and analysis memo (individual)	25%	23/11/2026
Homework (LCOE problem set, technology policy assignment and discussion posts/annotated readings)	20	Ongoing
Attendance and participation – including assigned discussion questions	10	Ongoing
Group Presentation	10	Throughout (will be assigned Week 2)
Final examination	30%	TBD

* Assessment marks for individual assessed tasks will be released within two weeks of the due date.

Mapping of Course ILOs to Assessment Tasks

Assessed Task	Mapped ILOs	Explanation
Country Policy Memo	ILO -1, ILO-2, ILO-3, ILO-4	This memo will require students to identify, for a country of their choice, key energy policy/policies, the enegy policy problems that are being addressed, and to analyze and communicate the policies' strengths and weaknesses.
Simulation prep book (group) and analysis memo (individual)	**ILO-2, ILO-3, ILO-4**	We will have an in-class climate negotiation simulation, with a focus on energy systems and the key actors in these systems. As a group, students will need to identify key energy policy problems, positions, and develop strategies for the simulation. Afterwards, students will debrief individually on the overall results. This will focus particularly on ILOs 1,2, and 3.

Homeworks (LCOE problem set, technology policy assignment and discussion posts/annotated readings)	**ILO-1, ILO-2, ILO-3**	There will be two analytical assignments, and a number of shorter discussion posts, that will help students to develop their skills in identifying and analyzing different elements of energy problems.
Attendance and participation – including assigned discussion questions	**ILO4, ILO-5**	Attendance and participation are crucial elements of meeting ILO-4 (communication) and ILO-5 (development of understanding of key challenges an uncertainties), as these will be emphasized in in-class activities, including discussions, debates, and case studies.
Group Country Policy Presentation	ILO -1, ILO-2, ILO-3	The group policy presentations in the first half of the semester will help students develop their ability to identify and analyze the issues and impacts of key energy policies, and how these differ across contexts.
Final examination	ILO -1, ILO-2, ILO-3, ILO-4, ILO-5	The final, 3 hour written exam will ensure that students have mastered key concepts, as well as the ability to apply and communicate these in the area of energy policy. It will consist of short answer and longer essay questions.

Grading Rubrics

Detailed rubrics for each assignment will be provided, along with assessment details, and posted on Canvas. These rubrics clearly outline the criteria used for evaluation, and I encourage students to refer to these rubrics to understand how their work will be assessed.

Final Grade Descriptors:

Grades	Short Description	Elaboration on subject grading description
A	Excellent Performance	Demonstrates a comprehensive grasp of subject matter, expertise in problem-solving, and significant creativity in thinking. Exhibits a high capacity for scholarship and collaboration, going beyond core requirements to achieve learning goals.
B	Good Performance	Shows good knowledge and understanding of the main subject matter, competence in problem-solving, and the ability to analyze and evaluate issues. Displays high motivation to learn and the ability to work effectively with others.
C	Satisfactory Performance	Possesses adequate knowledge of core subject matter, competence in dealing with familiar problems, and some capacity for analysis and critical thinking. Shows persistence and effort to achieve broadly defined learning goals.
D	Marginal Pass	Has threshold knowledge of core subject matter, potential to achieve key professional skills, and the ability to make basic

		judgments. Benefits from the course and has the potential to develop in the discipline.
F	Fail	Demonstrates insufficient understanding of the subject matter and lacks the necessary problem-solving skills. Shows limited ability to think critically or analytically and exhibits minimal effort towards achieving learning goals. Does not meet the threshold requirements for professional practice or development in the discipline.

Course AI Policy

Generative AI can have an important role in supporting our development of ideas and analytical framings. However, it is also important that you become familiar and comfortable enough with the material to develop a strong understanding of the key content, and its applications. In other words, we need to avoid the dangers of "cognitive offloading" while considering how to use AI tools to become more efficient. We will have specific approaches outlined for each assignments, but my general approach is as follows:

1. AI is a useful tool for starting background research, and appropriate tools can and should be used (such as the library's new AI research assistant). I would caution you strongly AGAINST relying on LLMs/ChatBots for this stage of research – there are very useful tools out there that will get you REAL sources!
2. AI/LLM summaries of course readings are superficial, and often fail to capture key points that are of particular interest for any given class session. I am not going to stop you from using these tools to create outlines or summaries, but be aware, you may miss key elements which you will be expected to know/understand. USER BEWARE
3. Documentation and transparency: I will ask you to add an annex to any major assignment that shows how you used AI (if at all! None is required!) – and I expect that if you do use it to generate ideas/outlines, there is evidence of significant work on YOUR part to take those suggestions and fill them out with your original work. Prove YOUR value add, or I will simply give your marks to the ChatBot!
4. I prefer your writing, even if it's not as 'good' – but again, there are many programs to help you copy edit. EDIT. NOT WRITE FOR YOU. Ok?
5. ***MAKE SURE THAT YOU READ ASSIGNMENTS CAREFULLY FOR PARTICULAR INSTRUCTIONS REGARDING THE USE OF AI***

Communication and Feedback

Assessment marks for individual assessed tasks will be communicated via Canvas within two weeks of submission. Feedback on assignments will include specific guidance on strengths, weaknesses, and areas for improvements. Students who have further questions about the feedback including marks should consult the instructor within five working days after the feedback is received.

Resubmission Policy

If you think you have a reasonable request for a review/regrade of an assignment, you have five days to submit the request to the instructor (NOT the TA). Please provide specific details justifying why you think that the grade was in error, and I will reassess accordingly.

For written assignments with a mark below a C, students have two weeks to rewrite and resubmit. I will take the average of the original and rewritten, with a cap of B. (Note: homework assignments where the answers

have been released, such as the LCOE problem set, are not eligible for resubmission; for the final exam, there will only be regrades allowed).

Required Texts and Materials

We will draw from three text books, all available as ebooks or pdfs, via Canvas and the library reserve readings. Other supplemental materials (articles, reports, videos, etc…) will also be posted on Canvas.

Classroom Expectations

Readings and Classwork:

This is a 3000 level course –which means that most of the students are in their 3rd or 4th years. By this point in your university career, I expect that you are responsible, independent students. At the same time, the topic matter (or most of it) will be new to many of you. This can mean a heavy load (intellectually) at times. The expectation is that you will do the readings for each session before the lecture, and I am making every effort to confine the required readings to manageable quantity. But because there is so much great literature, and new information and reports appear daily, I will also post interesting readings as supplemental readings.

The reason that it is so important to do the readings and class assignments is that this course is only as good as what you each are willing to put into it. Discussions will only work well if you are prepared, and come to class willing to engage in fruitful discussions. This is not a brain-transfer from the instructor to the classroom. Sustainability science is a cooperative, interdisciplinary endeavor, and working through the material together is as much an element of the course as the subject matter itself. The structure of the course gives multiple ways for all students to contribute, orally and in writing. But working on oral skills is an important element of the class, and the expectation is that all students will contribute to the discussions.

At HKUST we have fantastic students. You bring to the classroom a wealth of perspectives and experiences. So while vigorous discussion is encouraged, disrespect, inside of the classroom or out, will not be tolerated. We will work under Chatham House rules- what is said in the classroom stays in the classroom. Furthermore, under no circumstances will any student resort to personal attacks, however dry or witty. Any disrespectful or disruptive students will be asked to leave the class.

Graded Work and Academic Integrity:

For all of your formative and assessed work, it is expected that all assignments are original products produced by YOU. While we do a great deal of group work, the final product is your sole responsibility (except for the group presentations and report). So do no plagiarize, and make sure to be meticulous in citing your sources. If you have questions about the proper forms for citations, or issues around paraphrasing or use of quotations, please come talk with me. If you have any concerns at all about your work, please feel free to come see me during my office hours. I am always happy to help, whether you need someone to take a look at your writing, or to try out different ideas, want some extra explanation of a concept, or even just to chat about sustainability issues that interest you.

Students are expected to adhere to the university's academic integrity policy. Students are expected to uphold HKUST's Academic Honor Code and to maintain the highest standards of academic integrity. The University has zero tolerance of academic misconduct. Please refer to Academic Integrity | HKUST – Academic Registry for the University's definition of plagiarism and ways to avoid cheating and plagiarism.

Additional Resources

For policy research, the library has put together a fabulous guide for PPOL students. It is listed for TPGs, but is also completely appropriate for UGs.

https://libguides.hkust.edu.hk/ppol5770

The search tools page will be especially useful for you: https://libguides.hkust.edu.hk/ppol5770/search-tools

We will discuss, and post, other resources onto Canvas over the course of the semester.

Class Schedule/Topics

Week	Date	
1	**Sept-02**	Intro: What is Energy Policy?
2	**Sept-07**	Energy History and Problem Analysis
2	**Sept-09**	Energy Policy problems and policy tools
3	**Sept-14**	Japan
3	**Sept-16**	Philippines
4	**Sept-21**	Energy Systems
4	**Sept-23**	Energy Markets
5	**Sept-28**	Combustion (generation)
5	**Sept-39**	Transmission; Argentina Case Study
6	**Oct-05**	CBA and LCOE
6	**Oct-07**	Integrated Assessments
7	**Oct-12**	Energy System Game
7	**Oct-14**	Hydro Power
8	**Oct-19**	*No Class*
8	**Oct-21**	Storage and Batteries
9	**Oct-26**	Solar
9	**Oct-28**	Solar
10	**Nov-02**	Wind
10	**Nov-04**	Nuclear
11	**Nov-09**	Efficiency/Buildings
11	**Nov-11**	Electric Vehicles
12	**Nov-16**	Hong Kong's Energy Future
12	**Nov-18**	Geopolitics of Energy
13	**Nov-23**	Climate & Energy System Simulation
13	**Nov-25**	Climate & Energy System Simulation
13	**Nov-30**	Final Class/Review