

31C01300 Energy and Environmental Economics

—
Matters of practical nature

Iivo Vehviläinen

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Aalto University
School of Business



Course in brief

The Rodney & Otamatea Times

WAITEMATA & KAIPARA GAZETTE.

PRICE—10s per annum in advance

WARKWORTH, WEDNESDAY, AUGUST 14, 1912.

3d per Copy.

Science Notes and News.

COAL CONSUMPTION AFFECT- ING CLIMATE.

The furnaces of the world are now burning about 2,000,000,000 tons of coal a year. When this is burned, uniting with oxygen, it adds about 7,000,000,000 tons of carbon dioxide to the atmosphere yearly. This tends to make the air a more effective blanket for the earth and to raise its temperature. The effect may be considerable in a few centuries.

Learning Outcomes for the course

- The objective is to develop understanding of the basic problems in environmental, resource and energy economics
- Tools developed for analyzing market failures and instruments for solving them
- Familiarize the student with the main challenges in the energy sector, including those related to the environment
- This edition: We are using electricity markets as an example, though important also on its own, hopefully useful to everyone

Energy & environmental economics

Source: Climate Economics Chart from Blomend and ICE EOX Future

$A = \int_0^e d$

$V_i(x) = \max_x [U_i(x) - p \cdot e \cdot x]$
 $c, (1+r), e_0 > e_1$
 $V_i(x; e_1) - V_i(x; e_0) > c \cdot (1+r)$

$\sum_{t=0}^T \frac{C_t}{(1+r)^t} = \sum_{t=0}^T \frac{C_t}{(1+r)^t}$
 $LCOE = \frac{\sum_{t=0}^T \frac{C_t}{(1+r)^t}}{\sum_{t=0}^T \frac{1}{(1+r)^t}}$

pricing
 P_K
 $P_{subsidy}$
 clean
 dirty
 Q^*
 Q

Figure 1: Demand and supply bids.

Prices Pool: Fri 29 Jan 2016, hour 17

R&D

P
 C
 Q^*
 Q
 emission

Prices Pool: Fri 29 Jan 2016, hour 17

Prices Pool: Fri 29 Jan 2016, hour 17

A?

PRICES	RIGHTS	REGULATION	INFO/LEGAL
Taxes	Property rights	Technological standard	Public participation
Subsidy	Tradable permits	Performance standard	Information disclosure
Charge, fee/tariff	Tradable quotas	Ban	Voluntary agreement
Deposit-refund	Certificates	Permits	Liability
Refunded charge	Common property resource management	Zoning	

Of economics

THE RELATION OF ENGINEERING TO ECONOMICS

What is the value to an engineering student, a future engineer, of economics effectively taught? It will tend to broaden his views by showing engineering in its proper relation to other activities. It will help to develop the very valuable habit of thinking in terms of groups rather than of individuals, especially in matters of service. It will help the engineering student to see the real ultimate purposes of engineering. It will, for the best of engineering students, help to bring in the future years of engineering experience that wider vision which is the inspiration, the spiritual motive power of the great engineer.

– John F. Hayford, 1917

Of environmental economics

*Environmental economics,
past 50 years:*

Trends

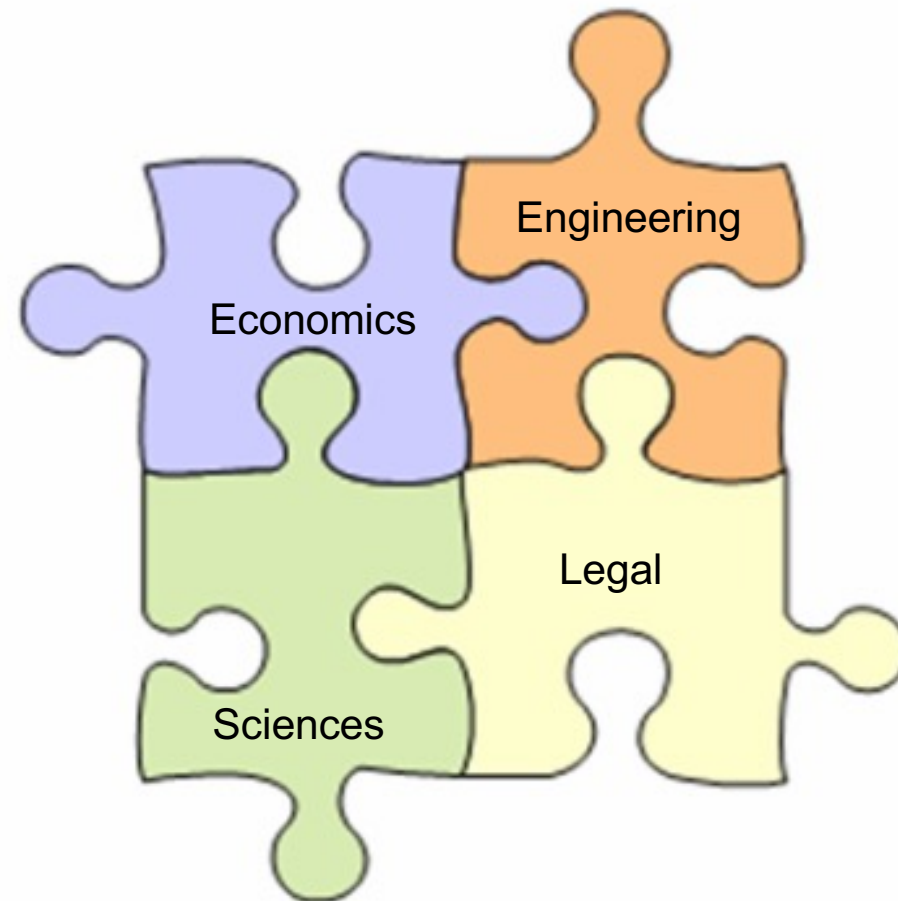
Causes

Consequences

Incidence

Key open questions:

- Natural resources
- Climate change



Path to continue in economics @ Aalto

NEW

Environmental and Energy major

Description

Environmental and Energy Economics major has a special focus on environmental and energy markets and policies. Environmental and energy economics endows the student with skills relevant for a broad set of public or private positions related to the energy transition.

Curriculum

<https://www.aalto.fi/en/programmes/masters-programme-in-economics/curriculum-2024-2026>

To apply: contact Professor Matti Liski

Matters of practical nature

Spring 2024

- The course is planned around the lectures
 - Physical lectures only, not recorded
 - Participation is not mandatory
 - Slides and some lectures notes will be available through MyCourses
- Presemo
 - Chat etc. available at <https://presemo.aalto.fi/eee> during the course
- Various other means to support the learning
 - Reading assignments, Electricity market game, Exercise sets

Spring 2024 – passing & grading

- Grading based on the Case Study (40 %) and Exam (60 %)
- Mandatory to take part in the reading assignments and the electricity market game
 - Incentivises you to keep up with a schedule
 - Studies show that having small external dead-lines should be helpful in your learning
- Extra exercise sets to test your learnings and prepare for the exam
- You are free to work with a pair for the Case study, and with your other peers with the other exercises

Help with economics

If your background is not in economics:

- You may find “The Economy” by the CORE project useful
 - It’s free! And not bad: we use it in principles levels economics
 - It is rather long for a quick reference and the exposition on externalities on this course is somewhat different
 - Note: we stick to version 1.0 during this course
- If you prefer videos, Marginal Revolution University is quite decent

<https://core-econ.org/the-economy/v1/index.html>

<https://mru.org/courses/principles-economics-microeconomics/>

Reading assignments 1/2

- You need to pass 5/6 of the reading assignments
- Readings are mostly academic research articles
- Assignments give detailed reading instructions
- Return through MyCourses quiz by the DL
- Notice that the purpose is not to internalize every detail in the articles (takes too much time!), but support the learning
 - This is where the quizzes will try to help you

Reading assignments 2/2

- Quizzes in MyCourses
 - The quiz has 3 attempts and no time limit, other than the deadline for submissions.
 - There are 3 questions with 4 statements each. Your task is to select the ones that are true.
 - The questions are all-or-nothing: One true statement left unselected or false statement selected means that the question is failed.
 - You need to pass at least 2 out of the 3 questions to mark the reading assignment completed. It is enough that the highest of your three attempts is above the threshold.
 - After each attempt, you can see which of your answers were correct. If you do not get a full grade, then you are still missing some of the right choices. If needed, go back to the article(s), and then have another attempt.
 - Do not try to misuse the automation: You will be failed!
- If you pass the quiz, this will count as passed reading assignment.

Electricity market game

Will be arranged as MyCourse quizzes. Separate instructions for each round within the quiz.

You need to pass 5/6 rounds. Unlimited attempts, hints from failed attempts.

Timeline

Round	Task
1	Place bids for coal, nuclear, wind
2	Calculate externalities
3	Emission tax and quota
4	Investment decisions
5	Storage bids
6	New technologies

The game should help you to

- a) Understand how the economics that we cover during the course are present in real world decisions.
- b) Improve the understanding of the connection between the energy markets and the environment.
- c) Develop your analytical skills.
- d) Keep up with the course schedule.

Exercise sets

- Opportunity to test your learnings so far
- Three exercise sets
 - Each set is a quick test of your skills from two weeks of material
- Arranged through MyCourses
 - You will need to complete the quiz by the deadline
- Not mandatory

Case study

40 % OF YOUR GRADE

- 3000–4000 words report on a policy case of your choosing
- Content guidelines:
 - Use the learnings from the course
 - Include your personal assessment
- You can work independently or with a pair
- Deadline is 2 June 2024, by 11:59 pm!
- Commitment: Required to submit a tentative topic by 3 May 2024
 - Ok to change the topic later
- Further instructions in MyCourses

Case study grading rubric

Item	0 points	1	2	3 points
i) The problem of interest	Provides a vague or no description of the problem.	Provides limited description of the problem.	-	Provides a clear description of the problem.
ii) Discussion of the results of your analysis / literature review	Analysis and/or presentation inadequate	Provides mostly adequate analysis and presentation	-	Provides clear and competent analysis and presentation.
iii) Relevance for policies	Fails to develop policy implications.	Develops some implications.	-	Develops clear implications.
iv) Clarity in communication	Uses non-academic style, language interferes with reading and comprehension	Uses sufficiently appropriate language that doesn't interfere with reading or comprehension.	-	Uses academic language with clear argumentation.

- Points awarded for each item will be summed up
- The sum is scaled so that gives 40 % of the full score for the course
- Remember to focus on the economics

Course policies: Use of AI

This course is about learning new conceptual things. AI already “knows” those, but you don’t. With that in mind, we have the following rules:

1. Use of AI is *not allowed* in writing the case study
2. This includes tools that help you to improve writing as these are indistinguishable from fully AI generated text

Automated detection of AI use will be used for screening. Failures to comply with the policy will be treated the same as cheating.

Course policies in general

Do not try to cheat or fool the automatic grading:

1. I will fail minor cases immediately.
2. More serious attempts will go to the official process*.

The purpose is to offer flexibility to many. Misuse of this flexibility is going to be handled strictly by the book

Exams

60 % OF YOUR GRADE

- First exam 6 June 2024 at 16.30-19.30
 - Proctored exam arranged by BIZ Learning Services, contact them for any special arrangements
- Second exam opportunity: in the Fall of 2024

Recap: This course

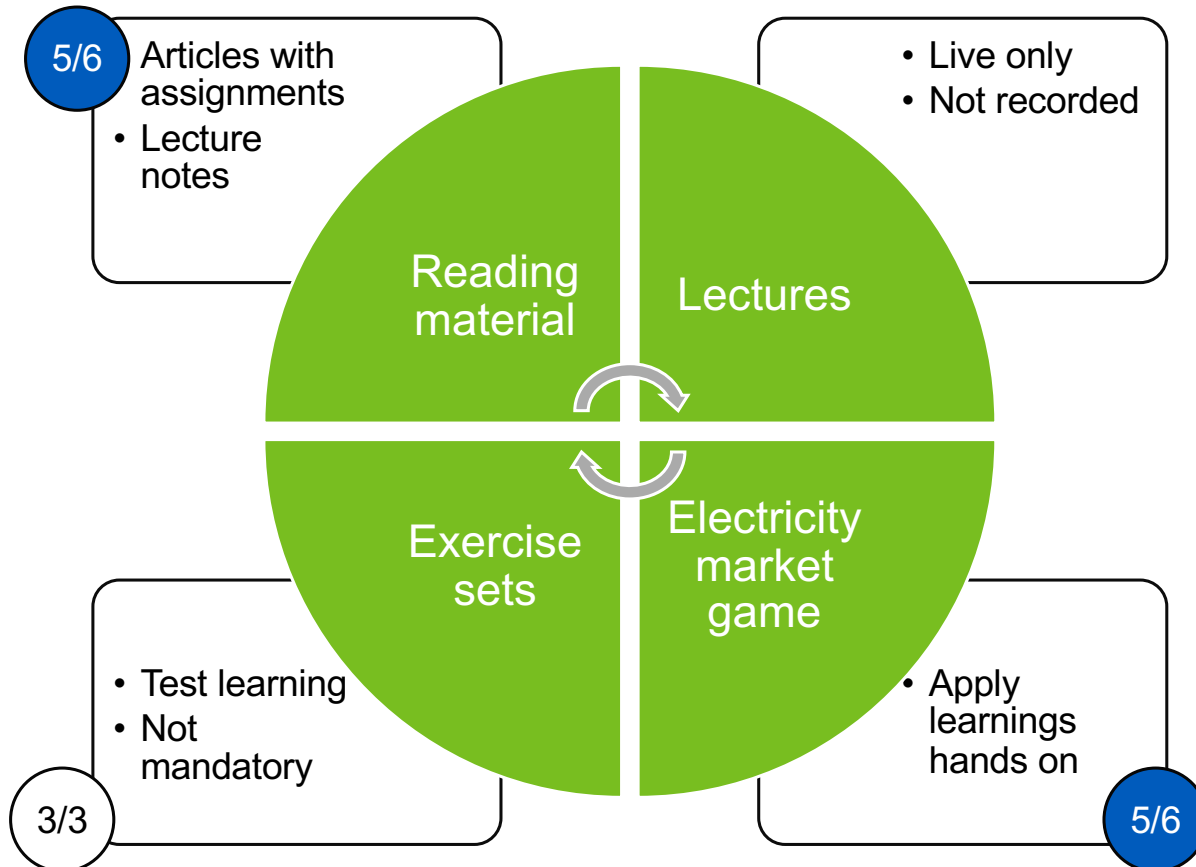


Share of grade

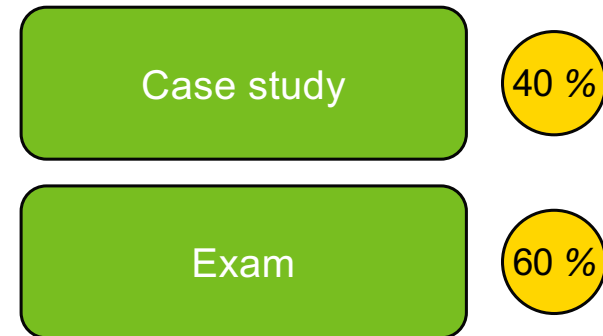


Submissions required

Weekly cycle



The whole course

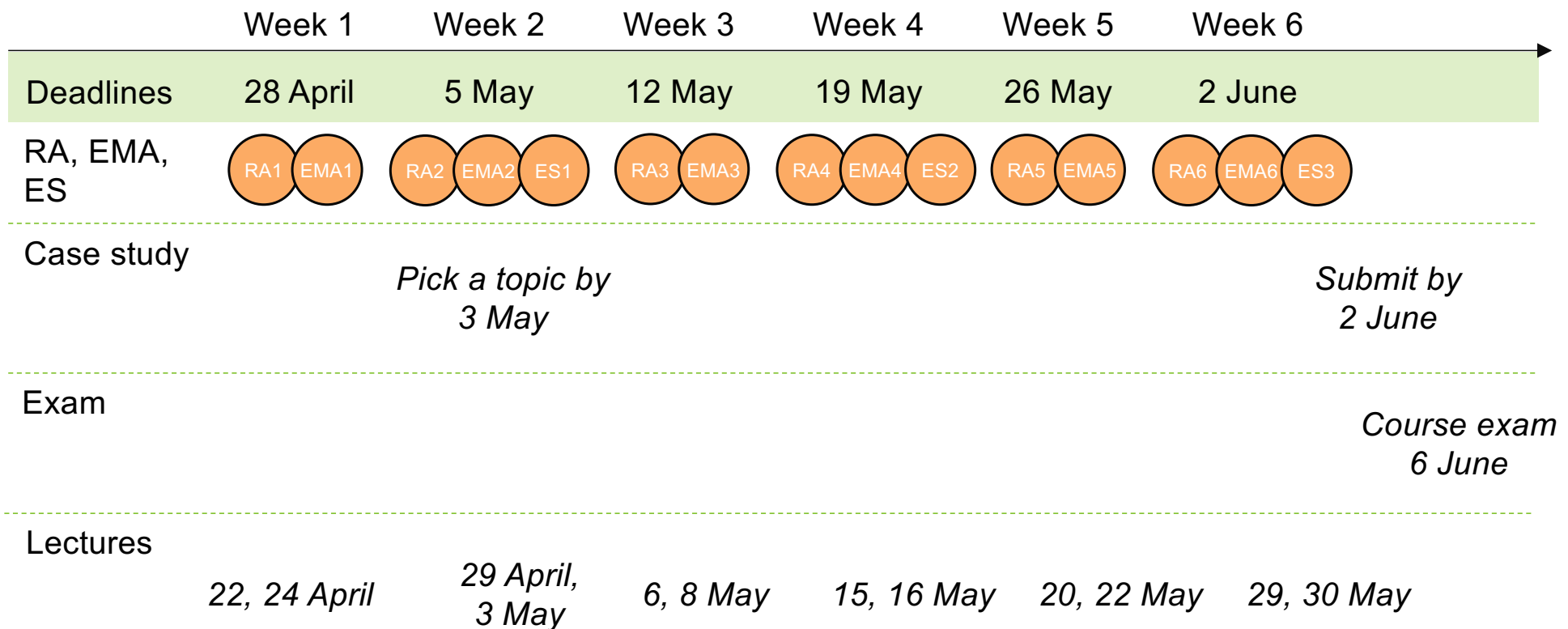


Tools in use

- Lectures in the classroom only
- Official business through MyCourses: return of assignments, electricity market game, exercise sets, and case study
- Asynchronous discussions: <https://presemoo.aalto.fi/eee/>

Recap: Weekly schedule

Feel free to study whenever you want, but **note the DLs!**



Team up!

- Working alone may or may not be your preferred way of learning
- Studies show that peer discussion can be helpful pedagogically
- Might be a good idea to just have someone to discuss to
- If you don't have a pair ready, I can make random assignments: send an email to iivo.vehvilainen@aalto.fi
- (Be mindful of what you share online)

Wait, what?

In case something is unclear:

1. Ask a friend
2. Check the course syllabus in MyCourses
3. Check the other instructions in the course files
4. Check the discussions in Presemo
5. Post a question to Presemo discussion under a relevant topic
6. Ask the lecturer by email
7. Book a meeting

Office hours

I'll be around during lecture times. For meetings:

- Please book a time: send an email to iivo.vehvilainen@aalto.fi
- Include a short explanation on the topic and a few time suggestions

I'll try to be available via email otherwise as well, but preemo is better for all things of common interest.