



31C01300/31E01310

## Energy & Environmental Economics

Mo 10-12, Wed 10-12, U1 / U154

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This version of the Syllabus: April 5, 2019

**Course Description:** This class has the objective of developing understanding of the basic problems in environmental, resource and energy economics. Tools will be developed for analyzing market failures and policy instruments for solving them. Detailed topics include: common pool resource use theory; pollution markets; consumer behavior and energy; electricity markets; description and analysis of resource and energy commodity markets. Main empirical cases include: emissions trading; Energy Paradox; pricing, emissions and investments in the electricity sector.

**Prerequisite(s):** Principles of Economics, or similar.

**Supporting textbook, not required:**

*Natural resource and environmental economics*, Perman, Ma, Common, Maddison, McGilvray, (2011, 4 th edition).

### Additional material

- supporting notes for the lectures
- readings for the lectures
- supporting material cited in the lecture notes

## Grade structure

Reading assignments	pass/fail (3 passes mandatory)
Problem sets	pass/fail (2 passes mandatory)
Case study	40%
Final exam	60%

## Course structure by topics (detailed breakdown and schedule below)

1. Externalities
  - a sources
  - b distortions: static, dynamic
  - c empirical measurements
2. Policy solutions
  - a Bargaining solutions
  - b Regulation: prices vs. quantities
  - c Unilateral policies
3. Pollution markets
  - a Global experience
  - b EU emissions trading scheme
4. Consumer behavior
  - a Energy Paradox
  - b Emissions and vehicle choice
  - c Consumers, housing, and emissions
5. Electricity markets
  - a Market design
  - b Investments: nuclear and renewable energy
  - c Energy transition
6. Energy commodity markets
  - a Exhaustible resources
  - b Green Paradox
7. Climate change policies
  - a The global policy design problem

## Course Policies:

- **General**

- No email correspondence regarding reading assignments and problem sets: they should be uploaded to the course webpage

- **Reading Assignments**

- Target: one reading assignment per week
- There will be a check-sheet for each reading, with questions on the reading
- Return each reading by the deadline, following the directions on the webpage (see the schedule)
- Readings prepare you for the lecture and provide supporting material for the cases
- **3 returned (and passed) readings mandatory**

- **Problem sets**

- Good to work independently on these
- The problem sets prepare you for the exam
- **Two returned (and passed) problem set is mandatory**

- **Bonus**

- If you return all assignments (readings, and problems), I will multiply your final grade by 1.1.

- **Case study**

- 8-12 pages report on a policy case
- Group work OK (max 2 persons)
- Lectures provide material for the choice of a topic; several case topics provided during the course
- 40 % of the final grade

- **Exam**

- Material: lectures (textbook is supporting material but not mandatory)
- 60 % of the final grade
- All credits from readings and problem sets are valid in the retake. The date for the retake is open but it will in August/September 2019.

## Detailed Course Breakdown:

Lecture	Content
Lecture April 15	<ul style="list-style-type: none"> <li>• Introduction to the course: Externalities</li> <li>• Material: lecture notes on externalities (available on the webpage), textbook</li> </ul>
Lecture April 17	<ul style="list-style-type: none"> <li>• Topic: Policy solutions</li> <li>• Voluntary reading assignment (not affecting the bonus): Measuring externalities</li> </ul>
Lecture April 23	<ul style="list-style-type: none"> <li>• Instrument design</li> <li>• Prices vs. quantities</li> </ul>
Lecture April 24	<ul style="list-style-type: none"> <li>• Pollution trading</li> <li>• Reading assignment: EU-ETS</li> </ul>
Lecture April 29	<ul style="list-style-type: none"> <li>• Topic: Consumer behavior</li> <li>• Energy technology choices by households</li> <li>• Reading assignment: TBA</li> </ul>
Lecture May 2	<ul style="list-style-type: none"> <li>• Topic: Emissions-based vehicle taxation</li> <li>• Car tax reforms, and other incentives</li> <li>• Reading assignment: TAB</li> </ul>
Lecture May 6	<ul style="list-style-type: none"> <li>• Topic: Electricity markets in general</li> <li>• Case: The Nordic electricity market</li> <li>• Reading assignment: TBA</li> </ul>
Lecture May 8	<ul style="list-style-type: none"> <li>• Topic: Renewable energy support schemes</li> <li>• Reading assignment: TBA</li> </ul>
Lecture May 13	<ul style="list-style-type: none"> <li>• Topic: Investments in electricity markets</li> <li>• Case: Nuclear power</li> <li>• Readings: TBA</li> </ul>
Lecture May 15	<ul style="list-style-type: none"> <li>• Topic: Exhaustible resources</li> <li>• Case: The market for oil and other scarce resources</li> <li>• Reading assignment: Hamilton</li> </ul>
Lecture May 20	<ul style="list-style-type: none"> <li>• Topic: Climate policies</li> <li>• Reading assignment: TBA</li> </ul>
Lecture May 22	<ul style="list-style-type: none"> <li>• Topic: Climate policies</li> <li>• Reading assignment: TBA</li> </ul>
Problem set 1	<ul style="list-style-type: none"> <li>• April 26: Return May 3</li> </ul>
Problem set 2	<ul style="list-style-type: none"> <li>• May 17: Return date May 24</li> </ul>
Exam	<ul style="list-style-type: none"> <li>• May 27</li> </ul>
Case study	<ul style="list-style-type: none"> <li>• Return by May 30</li> </ul>