

5M129Z01 - The Economics of Energy and the Environment

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Contact information:

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Department: MSO

Semester: 1

Course level: Graduate (M2)

Domain: Economics

Teaching language: French or English, depending on composition of class

Number of in-class hours: 36

Number of course sessions: 9 + Exam

ECTS: 6

Course description and objectives

The class will provide students with an overview of key concepts in both environmental economics and energy economics with a special focus on the performance of European electricity markets. The class will develop those notions in a framework alternating between private and social utility maximization.

Objectives:

The class should enable students to apply the most important notions of environmental and energy economics to basic policy analysis

Prerequisites

Registration in **2nd year Master classes** is restricted to graduate students and subject to the approval of the academic advisor for international students and MSO departments.

Learning outcomes

XXX

Assignments and grading

- Written exam

The numerical grade distribution will dictate the final grade. The passing grade for a course is 10/20.

Class participation: Active class participation – this is what makes classes lively and instructive. Come on time and prepared. Class participation is based on quality of comments, not quantity.

Exam policy: In the exam, students will not be allowed to bring any document (except if allowed by the lecturer). Unexcused absences from exams or failure to submit cases will result in zero grades in the calculation of numerical averages. Exams are collected at the end of examination periods.

Course structure

Session	Topic
1	Externalities, Fixed Costs and Information a. Private and public goods b. Externalities c. Informational complexity and transaction costs d. The role of governments
2	The Static Model of Optimal Internalisation of Externalities I a. The Pigouvian approach b. Instruments for Internalization c. The Working of Emissions Markets
3	The Static Model of Optimal Internalization of Externalities III a. The distributional implications of the static model b. Grandfathering versus auctioning c. Risk, uncertainty and option value
4	The Measurement of Externalities I a. Measuring Abatement Cost b. Measuring Social Costs (including loss of option value)
5	The Measurement of Externalities II a. Distributional implications of environmental policies b. The Coasean critique (Coase against Coase) c. The Rebound Effect
6	Energy and Sustainable Development a. Sustainable development in the energy sector b. Energy efficiency and the rebound effect c. World energy perspectives
7	Electricity Markets a. The functioning of electricity markets and price formation b. The investment challenge and the capacity issue
8	Topics in electricity markets a. Projected costs of generating electricity b. Carbon pricing c. System effects
9	The Interaction of Carbon and Electricity Markets a. Theories of price formation in the carbon market b. Causality between CO2 prices and energy variables c. Rents of electricity producers due to carbon pricing
10	Final Exam

Bibliography

- Arrow, Kenneth J. (1970). "The Organization of Economic Activity: Issues Pertinent to the Choice of Market versus Non-Market Allocation", in Robert H. Haveman and J. Margolis (eds.), *Public Expenditure and Policy Analysis*. Chicago.
- Coase, Ronald H. (1960). "The Problem of Social Cost", *Journal of Law and Economics* 1(1): 1-21. http://www.ecosystemvaluation.org/dollar_based.htm
- Freeman, Myrick (1979). *The Benefits of Environmental Improvements: Theory and Practice*. Baltimore: Johns Hopkins University Press.
- Joskow, Paul L. (2007), "Competitive Electricity Markets and Investment in New Generating Capacity", in Dieter Helm (ed.), *The New Energy Paradigm*, Oxford University Press, pp. 76-121 also at <http://economics.mit.edu/files/1190>.
- Keppler, Jan Horst (2010). « Causalities between CO 2 , Electricity, and other Energy Variables during Phase I and Phase II of the EU ETS » avec M. Mansanet-Batailler, *Energy Policy* 38(7): 3329-41.
- Keppler, Jan Horst (2010). « The Impact of the EU ETS on Prices and Profits in the Electricity Sector » avec M. Cruciani, *Energy Policy* 38(8): 3280-90.
- Keppler, Jan Horst (2010). « The Interaction Between the EU ETS Carbon Market and European Electricity Markets » in Ellerman D., Convery F. and de Perthuis C., *Pricing Carbon : The European Union Emissions Trading Scheme*, Cambridge University Press, Cambridge (UK), 2010, p. 293-328.
- Keppler, Jan Horst (2010). « Going with Coase against Coase: The Dynamic Approach to the Internalization of External Effects », in *The Economics and Finance of Sustainable Development*, Economica, Paris, p. 118-139.
- Keppler, Jan Horst (2000). « Prices, Technology Policy and the Rebound Effect » with F. Birol, *Energy Policy* 28 (6-7), p. 457-469.
- Keppler, Jan Horst (1998). « Externalities, Fixed Costs and Information », *Kyklos* 52 (4), p. 547-563.
- Pigou, Arthur Cecil (1932). *The Economics of Welfare*. London: Macmillan.
- Stoft, Steven (2002), *Power System Economics*, Piscataway (NJ), IEEE Press.

MyCourse

This course is on MyCourse: **Yes**

Academic integrity

Be aware of the rules in Université Paris Dauphine about plagiarism and cheating during exams. All work turned in for this course must be your own work, or that of your own group. Working as part of a group implies that you are an active participant and fully contributed to the output produced by that group.

Academic calendar

The pedagogical assistant will give you directly the schedule at the begin of the semester