

Environmental & Resource Economics

Course title - Intitulé du cours	Environmental & Resource Economics
Level / Semester - Niveau / semestre	M1 / S2
School - Composante	Ecole d'Economie de Toulouse
Teacher - Enseignant responsable	SALANIE - HERRERA - MASSOL
Lecture Hours - Volume Horaire CM	30
TA Hours - Volume horaire TD	0
TP Hours - Volume horaire TP	0
Course Language - Langue du cours	Anglais
TA and/or TP Language - Langue des TD et/ou TP	Anglais

Teaching staff contacts - Coordonnées de l'équipe pédagogique :

François Salanié

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Olivier Massol, CentraleSupélec, Université Paris-Saclay

Email : olivier.massol@centralesupelec.fr

Office : Not decided. Meeting after prior appointment by email.

Course's Objectives - Objectifs du cours :

This course is divided into three parts which will be taught by three different professors.

The first half of the course analyzes environmental problems as examples of what is bound to happen when some markets are missing. It is mainly theoretical, but nevertheless offers strong guidelines for the design of public policies. From these principles, one can derive insights on how to manage externalities or public goods, and when taxation, markets for rights, or other instruments, should be used. Applications: fisheries and biological systems, water management, global warming.

The second part of the course will introduce an in-depth analysis of one the instruments to reduce carbon emission by means of a case study. Next, we will explore two questions that are important when evaluating environmental policies: valuation of mortality risk and of future consequences. The first concerns how much it is worth spending to reduce toxic pollution and the second concerns how much it is worth spending now to reduce future harms. For example, the social cost of carbon is the present value of the monetarized damages caused by one more ton of CO₂ emitted today.

The third part of the course will introduce the field of energy economics. After defining key concepts in energy markets, the course will look more into the characteristics of the oil and electricity markets. We will further discuss the main economics of depletable resources (Hotelling) as well as to the specific economic problems observed in resource-rich nations.

The course will then review the economics of network-based energy industries and discuss some of the key issues observed in the power and gas sectors. Lastly, the course will concentrate on the contemporary debates pertaining to the interconnection of energy economics and the environment and the complex interactions between climate policies and the transition observed in the energy sector.

COURSE OUTLINE

- 1) Environmental Policies (F. Salanié), 15 hours
 - a) What happens: open access, externalities, public goods
 - b) What we should aim at: the missing market failure
 - c) What we should do: optimal policy instruments
 - d) Applications.

- 2) Environmental Instruments and health risks (D. Herrera), 7.5 hours

- a) Tax-based instrument to reduce carbon emissions: a case study analysis
- b) Valuing mortality and valuing morbidity risk

- 3) An introduction to Energy Economics and (O. Massol), 7.5 hours

- a) Introduction
- b) The global oil and gas markets and the economics of fossil fuels
- c) The economics of network energy industries (electricity, gas, CO₂, H₂)
- d) Interactions between energy and the environment

Prerequisites - Pré requis :

Good understanding of intermediate microeconomics.

Grading system - Modalités d'évaluation :

The first part of the course ("Environmental Policies") will be evaluated by a mid-term exam that will take the form of a combination of a written exam and problem sets (the exact format will depend on whether campus, in person, teaching will be the norm). The second part ("Environmental Instruments and health risks") will be evaluated by student presentations in class and a take-home exam. The third part ("Energy Economics") will be evaluated by a report. Lecture attendance is mandatory for parts 2 and 3.

Bibliography/references - Bibliographie/références :

Students will be informed about the required reading at the start of the course and will in addition to any textbook consist of published scientific articles. Lecture notes, required readings, except textbooks, and any exercises will be made available through the Moodle course page.

Distance learning – Enseignement à distance :

Depending on the situation, distance learning may be implemented. If necessary, it can be a mix of “Standard lectures”, “Interactive virtual classrooms”, “Recorded lectures” (videos), with the support of a Chatroom/Forum, and online exercises may complement evaluation tasks described above under “Grading”.