

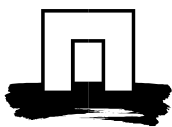
# Course Outline 2013-2014

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Environmental Economics and  
Natural Resources Group  
De Leeuwenborch building  
Hollandseweg 1  
6706 KN Wageningen  
The Netherlands

## Environmental Economics for Environmental Sciences

<b>Course code:</b>	ENR-21306
<b>Credits:</b>	6
<b>Language:</b>	English
<b>Lecturers:</b>	Silke Gabbert and Andries Richter (Period 2) Silke Gabbert and Xueqin Zhu (Period 5)
<b>Examiner(s):</b>	Silke Gabbert, Andries Richter, and Xueqin Zhu
<b>Secretariat:</b>	Gre Schurink, Leeuwenborch N1107, tel. 0317 – 484255
<b>Periods:</b>	2 5
<b>First lecture:</b>	Per 2: 29 October 2013 Per 5: To be announced
<b>Exam:</b>	Per 2: 16 Dec. 2012, 8.30-11.30, C222 (Forum) Per 5: 14 August 2014, 13.30-16.30, C75
<b>Contents:</b>	<ol style="list-style-type: none"><li>1. Introduction</li><li>2. Learning outcomes and exam</li><li>3. Prerequisites</li><li>4. Activities</li><li>5. Literature</li><li>6. Schedule</li></ol>



**WAGENINGEN UNIVERSITY**  
SOCIAL SCIENCES

## 1. Introduction

The course deals with the theory of environmental economics and its empirical applications. It is developed for students of non-economic study programmes who are interested in environmental economics. It is also suitable as an introduction to environmental economics for international MSc students of economic study programmes. The aim of the course is to show how environmental problems can be approached and analysed using economic theory. Furthermore, the course demonstrates how economic theory provides guidance to finding solutions to serious environmental problems such (e.g. global warming, ozone depletion, air and water pollution) at different scales (global, regional).

## 2. Learning outcomes and exam

The learning outcomes of the course are described in the table below.

<b>After successful completion of the course students are expected to be able to</b>	<b>Examination</b>
explain the theoretical foundations of environmental economics	Written exam, written exercises
explain key concepts, strengths and limitations of environmental economic analysis (e.g. sustainability, efficiency, Pareto optimality, market failure, externalities)	Written exam, written exercises
analyze important environmental problems (e.g. pollution) from an economic point of view	Written exam, written exercises, case study report
understand and explain key economic instruments and policy measures for solving economic problems (e.g. taxes, subsidies, tradable permits) on an international scale	Written exam, written exercises
apply economic concepts to some specific cases (e.g. climate policy, water management, air pollution, risk management of hazardous materials)	Case study report
compile and structure information about a topic in environmental economics for writing a scientific essay.	Case study report

The final grade of the course depends on the grades for the (take-home) exercises, the case study report, and the written exam (see also point 4). The grade for the exam contributes 60% to the final course grade; the average of the take-home exercises contribute 20%; and the case study report contributes 20%. In order to pass the course, it is necessary to receive at least grade 5.5 for the exam and (an average) grade 5.5 for exercises and the case study. At least 80% of the take-home exercises must be handed in; exercises not handed in will be graded 0. If one of the two parts (exam, case study + exercises) received a grade less than 5.5 the course counts as "partially completed". Valid grades remain in the database for max. 2 years. If a student fails to complete the remaining parts within this period the course grade becomes "not passed" and the complete course has to be repeated.

The exam date for period 2 is

16 December 2013, 08:30-11:30, room C222 (Forum);

The date for the re-exam in 2014 will be announced. Students who will participate in a re-exam are responsible for updating their course material (slides, exercises etc.) according to the most recent course.

### **3. Prerequisites**

As a background, completion of the course “Environmental Policy Instruments” (ENP-10806) or some basic understanding of (micro-) economics would be useful, but not mandatory. Knowledge of basic mathematic calculus (highschool level) is strongly recommended. After completing this course, BSc students can proceed to the bachelor completion in environmental economics. MSc students can proceed to more advanced courses in environmental economics such as Cost Benefit Analysis and Environmental Valuation, Advanced Environmental Economics and Policy, Economics and Management of Natural Resources, Theories and Models in Environmental Economics, and Selected Topics in Environmental and Resources Economics.

### **4. Activities**

#### **4.1 Lectures**

The course consists of three classroom lectures per week and a number of take-home assignments. These are (i) exercises (see 4.2) and (ii) a case study report (see 4.3). The lecturers of the course in Period 2 are Silke Gabbert and Andries Richter, and in Period 5 Silke Gabbert and Xueqin Zhu. Students are expected to attend the lectures and to prepare themselves by studying the reading material (see point 5 and 6).

#### **4.2 Exercises**

In addition to preparing the lectures using the recommended reading material, students will have to carry out take-home exercises. The aim of the exercises is to practice with the theories and methods presented during the lectures. Students can work on exercises either individually or in groups of up to four people and we offer the opportunity to discuss exercises on Thursdays. The exercises must be handed in before they are discussed in class.

#### **4.3 Case study report**

Students have to write a case study report (essay) about an environmental economics and policy topic. The aim is learn how to apply the acquired theoretical knowledge to selected environmental economics and policy issues, how to compile and structure information and to learn scientific working skills. Students can either select a case study topic (including some guiding questions) from Eduweb or make own suggestions. The case study should be carried out in groups of up to 4 students. The case study report should be no longer than 2-3 pages. The case study has to be submitted before a defined deadline, which will be announced in the first week of the course. Students will get feedback on the case study from the lecturers.

All assignments will be published on the Blackboard page of the course.

## 5. Literature

The literature for the course consists of

- Perman, R., Y. Ma, J. McGilvray, and M. Common (2011): "Natural Resource and Environmental Economics", 4<sup>th</sup> ed., Pearson Education, Harlow, chapters 1-2 and 4-7 and 9 (excluding some sub-chapters, see the schedule below);
- Perloff, Jeffrey M. (2004): "Microeconomics". 3<sup>rd</sup> ed., Pearson, Addison Wesley, chapters 4 and 6;
- Additional material that will be provided by the teachers.

## 6. Course schedule

Lecture	Lecturer	Contents	Literature	Exercises
1a.	Silke Gabbert	Introduction <ul style="list-style-type: none"> <li>• Overview of course</li> <li>• Main environmental problems</li> <li>• Brief overview of the history of economic thought</li> <li>• Environmental vs. ecological economics</li> </ul>	Perman et al., Ch. 1,2	
1b.	Silke Gabbert	Origins of environmental economics <ul style="list-style-type: none"> <li>• Economic cycle and relation with the environment</li> <li>• Definitions and importance of the sustainability concept</li> <li>• Limits to growth</li> <li>• Environmental Kuznets Curve</li> </ul>	Perman et al., Ch. 1,2	
1c.	Silke Gabbert	Introduction to micro-economics I <ul style="list-style-type: none"> <li>• Consumer behavior, incl. preferences, utility, budget constraints, utility maximization, demand</li> <li>• Refresher of mathematic calculus</li> <li>• Constrained optimization problems: Lagrange method</li> <li>• Introduction to writing a case study report</li> </ul>	Perloff, Ch. 4	
2a.	Silke Gabbert	Introduction into micro-economics II <ul style="list-style-type: none"> <li>• Producer behavior, profit maximization, cost minimization, supply</li> <li>• Economies of scale</li> <li>• Efficiency and Pareto optimality</li> </ul>	Perloff, Ch. 6	
2b.	Silke Gabbert	Introduction into micro-economics III: welfare economics <ul style="list-style-type: none"> <li>• Social welfare function</li> <li>• Optimal allocation on a competitive market</li> <li>• Partial analysis: Consumer and producer surplus</li> </ul>	Perman et al., Ch. 4, Parts I and II	
2c.	Silke Gabbert	Discussion of exercises		1, 2
3a.	Silke Gabbert	Market failure and public goods I <ul style="list-style-type: none"> <li>• Public vs. private goods</li> <li>• Optimal allocation of a public good</li> <li>• Strategic behavior and the prisoner's dilemma</li> </ul>	Perman et al., Ch. 4 Part III	

3b.	Silke Gabbert	Market failure and public goods II <ul style="list-style-type: none"> <li>• Externalities</li> <li>• Partial welfare analysis of external effects</li> <li>• Regulation of external effects</li> <li>• Coase theorem</li> <li>• Pigouvian taxation</li> </ul>	Perman et al., Ch. 4 Part III	
3c.	Silke Gabbert	Discussion of exercises		3,4
4a.	Andries Richter/ Xueqin Zhu	Pollution control: targets <ul style="list-style-type: none"> <li>• pollution flows and stocks</li> <li>• privately and socially efficient level of pollution</li> </ul>	Perman et al., Ch. 5	
4b.	Andries Richter/ Xueqin Zhu	Pollution control: Instruments I <ul style="list-style-type: none"> <li>• criteria for choice of instruments</li> <li>• cost efficiency and cost effectiveness</li> <li>• command and control instruments</li> <li>• economic (market based) instruments</li> <li>• institutional instruments</li> </ul>	Perman et al., Ch. 6, Sections 6.1– 6.3	
4c.	Silke Gabbert	Discussion of exercises		5,6
5a.	Andries Richter/ Xueqin Zhu	Pollution control: Instruments II <ul style="list-style-type: none"> <li>• instruments: taxes, subsidies, tradable permits</li> </ul>	Perman et al., Ch. 6, Sections 6.4– end	
5b.	Andries Richter/ Xueqin Zhu	Pollution control: imperfect information <ul style="list-style-type: none"> <li>• limited information and uncertainty</li> <li>• precautionary principle</li> <li>• transaction costs</li> </ul>	Perman et al., Ch. 7.	
5c.	Andries Richter / Xueqin Zhu	Discussion of exercises		7,8
6a.	Andries Richter / Xueqin Zhu	International environmental problems I: game theory <ul style="list-style-type: none"> <li>• tragedy of the commons</li> <li>• international games on transboundary pollution</li> </ul>	Perman et al., Ch. 9 Section 9.1	
6b.	Andries Richter / Xueqin Zhu	International environmental problems II: transboundary pollution and international agreements <ul style="list-style-type: none"> <li>• reasons for (non)cooperation</li> </ul>	Perman et al., Ch. 9 Section 9.1 and 9.3 (9.2 can be skipped)	
6c.	Andries Richter / Xueqin Zhu	Discussion of exercises Summary, information about exam		9,10