

**UNIVERSITY OF WATERLOO**  
**Department of Economics**  
**Economics 357 – Environmental Economics**  
**Winter 2009**

**Instructor:** Alain-Désiré Nimubona  
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**Office Hours:** 10:00-11:30 am, MW  
**Schedule:** 5:30-6:50 pm, MW  
**Room:** AL 105

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## Course Description

This is an applied course that is concerned with the application of microeconomic theory to environmental problems, such as air and water pollution. The course also draws from other branches of economics such as industrial organization and public finance. It is divided in five main sections. The first section defines the field of environmental economics in relation to general economics and to ecological and resource economics. The second section looks at the origins of the sustainability problem, by considering its conceptualisations, and examines the ethical underpinnings of environmental economics. The third section provides a quick review of the theory of efficiency of markets and market failure. The fourth section presents and evaluates different regulatory means to deal with pollution control. The final section is devoted to some special topics within the field, including international environmental issues, environmental outsourcing, etc. The number of special topics that will be covered will depend on time availability.

## Prerequisite

ECON 201 is a prerequisite for the success in this course. Also required are elementary algebra and calculus.

## Textbooks

The students' main support for this course will be the following:

Kolstad, C. D. (2000), *Environmental Economics*, Oxford University Press.

This textbook will be available for purchase at the university bookstore.

In addition, we will draw some material from the following references:

- Baumol, W.J. (1995), "Environmental Industries with Substantial Start-up Costs as Contributors to Trade Competitiveness", *Annual Review of Energy and the Environment*, 20: 71-81.
- Perman, R., Ma, Y., McGilvray, J., and M. Common (2003), *Natural Resource and Environmental Economics*, Third Edition, Pearson / Addison Wesley.

These additional references will be put on reserve in the Dana Porter Library.

## Evaluation

Students will be evaluated based on the following activities:

- Two midterm tests to be held on Wednesday February 4<sup>th</sup> and Wednesday March 11<sup>th</sup>, during class time. Subject coverage for both midterms will be specified in class.
- A final exam to be scheduled by the registrar. The final exam will cover all course material for the term.

The final mark for the course will be the maximum of the following: [25% Midterm I + 25% Midterm II + 50% Final]; [25% Midterm I + 75% Final]; [25% Midterm II + 75% Final]; or 100% Final. If you miss one of the two midterms for any reason, your final mark will be the maximum of [25% Midterm + 75% Final] or 100% Final. If you miss both midterms for any reason, the weighting of the final exam will be increased to 100%.

Exercises to help students prepare for the tests will be done in class.

## Topics

1. Introduction
  - 1.1. What is environmental economics?
  - 1.2. Environmental problems and policy solutions
2. Intergenerational equity and sustainability
  - 2.1. The origin of the sustainability problem
  - 2.2. Concepts of sustainability
3. Efficiency, optimality, and market failure
  - 3.1. Normative approach to the decision process
  - 3.2. Economic efficiency
  - 3.3. Dynamic efficiency
  - 3.4. Market failure: public bads and externalities
  - 3.5. Property rights
  - 3.6. Pigouvian fees

4. Regulation of pollution
  - 4.1. Overview of regulatory issues
  - 4.2. Basic regulatory instruments
  - 4.3. Instrument choice
  - 4.4. Regulation with unknown control costs
  - 4.5. Risk, uncertainty, and liability law
  
5. Special topics
  - 5.1. International dimension of environmental regulation
  - 5.2. Economy wide effects of environmental regulations
  - 5.3. Measuring the demand for environmental quality
  - 5.4. Environmental outsourcing and the eco-industry.

## Tentative Course Schedule and Readings\*

Date	Topics	Readings
Monday, January 5	What is environmental economics?	Kolstad, Ch 1
Wednesday, January 7	Environmental problems and policy solutions	Kolstad, Ch 2
Monday, January 12	The origin of the sustainability problem	Perman et al., Ch 2 & Ch 4
Wednesday, January 14	Normative criteria	Kolstad, Ch 3
Monday, January 19	Economic efficiency	Kolstad, Ch 4
Wednesday, January 21	Dynamic efficiency	Kolstad, Ch 4
Monday, January 26	Market failure: public bads and externalities	Kolstad, Ch 5
Wednesday, January 28	Property rights and externalities	Kolstad, Ch 6
Monday, February 2	Pigouvian fees	Kolstad, Ch 7
Wednesday, February 4	<b>1st Midterm</b>	
Monday, February 9	Overview of regulation issues	Kolstad, Ch 8
Wednesday, February 11	Basic regulatory instruments	Kolstad, Ch 8
<b>Reading week (February 16 – 20)</b>		

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\* Some topics may require more or less emphasis than planned here. To reflect that need, this schedule may be updated as we move through the term.

<b>Date</b>	<b>Topics</b>	<b>Readings</b>
Monday, February 23	Basic regulatory instruments	Kolstad, Ch 9
Wednesday, February 25	Instrument choice	Kolstad, Ch 9
Monday, March 2	Regulation with unknown control costs	Kolstad, Ch 10
Wednesday, March 4	Regulation with unknown control costs	Kolstad, Ch 10
Monday, March 9	Risk, uncertainty, and liability law	Kolstad, Ch 12
Wednesday, March 11	<b>2nd Midterm</b>	
Monday, March 16	International dimension of environmental regulation	Kolstad, Ch 13
Wednesday, March 18	Economy wide effects of environmental regulations	Kolstad, Ch 14
Monday, March 23	Economy wide effects of environmental regulations	Kolstad, Ch 14
Wednesday, March 25	Measuring the demand for environmental quality	Kolstad, Ch 15
Monday, March 30	Environmental valuation techniques	Kolstad, Ch 16, Ch 17 & Ch 18.
Wednesday, April 1	Environmental outsourcing and the eco-industry	Baumol (1995)

**Policy on missed tests:** There is no make-up exam for the midterms. A student who has been ill (documentation required) and missed the scheduled final exam MUST petition the Department of Economics Undergraduate Office within five calendar days to write the Departmental Deferred Examination. If the student has failed to write the Departmental Deferred Examination, the student will automatically receive a grade of 0% for the missed deferred final examination.

**Policy on remarking of tests:** If you feel that your test was not marked properly, you must advise the instructor within 6 calendar days of the date on which the test is handed back to the class. Any student that submits a test for remarking should understand that the entire test will be remarked and that their grade may improve, remain unchanged or perhaps even decrease as a result of the remarking process.

**Note on communication with the instructor:** Please only e-mail the instructor for administrative purposes (e.g. reasons why you will not be able to attend an exam). When e-mailing the instructor, the subject line of the e-mail must contain ECON 201. I will not answer any questions regarding course material via e-mail. However, I welcome as many questions as possible during class time and my office hours.

**Academic Integrity:** In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility.

**Grievance:** A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70 - Student Petitions and Grievances, Section 4, <http://www.adm.uwaterloo.ca/infosec/Policies/policy70.htm>

**Discipline:** A student is expected to know what constitutes academic integrity, to avoid committing academic offences, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about “rules” for group work/collaboration should seek guidance from the course professor, academic advisor, or the Undergraduate Associate Dean. When misconduct has been found to have occurred, disciplinary penalties will be imposed under Policy 71 – Student Discipline. For information on categories of offences and types of penalties, students should refer to Policy 71 - Student Discipline, <http://www.adm.uwaterloo.ca/infosec/Policies/policy71.htm>

**Appeals:** A student may appeal the finding and/or penalty in a decision made under Policy 70 - Student Petitions and Grievances (other than regarding a petition) or Policy 71 - Student Discipline if a ground for an appeal can be established. Read Policy 72 - Student Appeals, <http://www.adm.uwaterloo.ca/infosec/Policies/policy72.htm>

**Note for students with disabilities:** The Office for Persons with Disabilities (OPD), located in NH1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the OPD at the beginning of each academic term.