

Syllabus

for course at advanced level

The Climate and The Economy
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**7.5 Higher Education
Credits**
7.5 ECTS credits

Course code:	EC7104
Valid from:	Spring 2010
Date of approval:	2009-11-12
Department	Department of Economics
Main field:	Economics
Specialisation:	AXX - Second cycle, in-depth level of the course cannot be classified

Decision

This syllabus was approved by the Board of the Department of Economics on November 12, 2009.

Prerequisites and special admittance requirements

45 HECs of Economics, including the courses EC2101 and EC2201 or equivalent, or a Bachelor's degree in Biology, Physics, Mathematics, Statistics, Geography, Geology, Geoscience, Chemistry, Meteorology, Environmental Chemistry, Environmental Science, Physical Geography or Quaternary Science.

Course structure

Examination code	Name	Higher Education Credits
710A	The Climate and the Economy	7.5

Course content

The aim of this course is to use economic tools to analyse environmental issues, especially those concerning climate change related to global warming. The course will introduce such tools and their use for analysing the interplay between the economy and climate. It will also contemplate how economic policy can be used to influence the future development of the economy and the climate.

The focus of the course is on analysing these issues on a global and regional level in the so-called general equilibrium: both the supply and demand of fossil fuels will thus be studied and modelled. The analysis of the economic policy regarding climate change will include measures designed to reduce and postpone the emission of greenhouse gases (mitigation), as well as measures designed to lessen the harmful effects of global warming (adaptation).

The course will begin with an introduction to useful models from Public Finance and growth theory. The models will be formulated mathematically rather than graphically in order to allow for quantitative, i.e. empirically oriented, analysis. The course will also include a simple description of certain scientific connections, especially the carbon cycle model. However, a critical review of these connections is outside the scope of this course.

Learning outcomes

Upon completion of this course the student is expected to be able to:

- Give an account of the interplay between the economy and climate change in a dynamic context;
- Use and construct dynamic models with both an economic component and a scientific climate component

with the purpose to describe:

1. possible future development under various assumptions;
2. what an economically optimal development is; and
3. how economic policy instruments can be constructed in order to affect the development in the optimal direction.

Education

Instruction is given in the form of lectures. The language of instruction is English.

Forms of examination

The course is examined on the basis of written examinations. Students will receive letter grades on a seven-point scale related to the learning objectives of the course: Passing grades are A, B, C, D and E, where A is the highest grade and E the lowest. Failing grades are F and Fx, where F is the lowest. The following assessment criteria are used:

- A (Excellent): The student has a well-developed overall picture of the theoretical and empirical tools within dynamic climate economics and is able to use and individually construct growth models with climate externalities in general equilibrium. The student is able to critically analyse the weaknesses and strengths of existing models and discuss how such models can be developed. The student is able to, using existing and personally constructed models, characterise the optimal allocation, the decentralised equilibrium and how economic policy may affect the latter in the optimal direction. The student should be able to use and construct models that allow for quantitative analysis and describe how numerical methods can be used to solve more complicated models.
- B (Very Good): The student has a well-developed overall picture of the theoretical and empirical tools within dynamic climate economics and is able to use and individually construct simple growth models with climate externalities in general equilibrium. The student is familiar with the weaknesses and strengths of existing models and, to some extent, how these models can be developed. The student is able to, using existing models, characterise the optimal allocation, the decentralised equilibrium and how economic policy may affect the latter in the optimal direction. The student should also be able to use existing models to perform a quantitative analysis.
- C (Good): The student has a good understanding of the theoretical and empirical tools within dynamic climate economics and is able to use growth models with climate externalities in general equilibrium. The student is familiar with the weaknesses and strengths of existing models and is able to, using existing models, characterise the optimal allocation, the decentralised equilibrium and how economic policy may affect the latter in the optimal direction. The student should also know how such models can be used to perform a quantitative analysis.
- D (Satisfactory): The student has a good understanding of the theoretical and empirical tools within dynamic climate economics and is able to use simple growth models with climate externalities in general equilibrium. The student is able to use such models to characterise the optimal allocation, the decentralised equilibrium and how economic policy may affect the latter in the optimal direction. The student should also have some knowledge of how such models can be used to perform a quantitative analysis.
- E (Adequate): The student has a satisfactory understanding of the theoretical and empirical tools within dynamic climate economics and is able to use simple growth models with climate externalities in general equilibrium. The student is able to use such models to characterise the optimal allocation, the decentralised equilibrium and how economic policy may affect the latter in the optimal direction. The student should also be able to describe what it takes for these models to be used for a quantitative analysis.
- Fx (Inadequate): The student has only partially fulfilled the criteria for the grade E.
- F (Totally Inadequate): The student has not fulfilled the criteria for the grade E.
For students who fail a course unit and receive the grade Fx or F on an examination there are no restrictions on how many times they are allowed to retake the examination in order to obtain a grade of E or higher.

Interim

If this course is discontinued, students have the right to be examined on the course once per semester for three further semesters.

Required reading

- IPCC Fourth Assessment Report (AR4), Climate Change 2007: The Physical Science Basis.
- Excerpts from: Jones, Charles I., Introduction to Economic growth, 2e, Norton, 2002.
- Excerpts from: Varian, Hal R., Microeconomic Analysis, 3e, Norton 1992.
- Articles
- Lecture notes