

# Syllabus ECON0052 2019-2020

## Environmental Economics

### Content

ECON0052 Environmental Economics is a course that is different from many of the courses that you have had before. So it is important you read this syllabus with some care before choosing this module in your 2nd or final year.

#### **Aims:**

The aim of the course is to train you in several important **skills** such as:

- the skill to model environmental economics problems using Mathematica to assess the outcomes of policies and to assess costs and benefits of competing policy proposals;
- the skill to incorporate regularities and patterns from environmental science into environmental economic and macroeconomic models;
- the skills to analyse and assess assumptions going into such models, their effects on the validity of outcomes and consequences for policy choices and debate;
- the skills to model the effects of market-structures on the exploitation and management of both renewable as well as finite resources;

The course also aims to convey additional knowledge that will augment and add to the **knowledge** you will have required in year-1 Mathematics for Economists or equivalent courses. This involves

- Market failures in environmental contexts;
- Policy responses to market failures;
- Environmental valuation methods and their pros and cons;
- Cost-Benefit-Analysis and dynamic optimisation;
- Optimal renewable & finite resource extraction;
- 'Optimal' pollution;
- Global climate change: causes, mitigations & adaptation;

#### **Question:**

Are these skills and knowledge that you would enjoy acquiring?

#### **Mathematica:**

This is not a 'coding class' although by the end you will have a working familiarity with basic

Mathematica use. No previous exposure is required although having taken ECON0114 will allow you to do for more interesting projects (see **group project** assessment)

*The lecturer will exclusively use Mathematica, however any of the coding done could equally well be done in MatLab or programming languages such as Python or C++.*

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## Assessment

This module has formative assessment and summative assessment in the following way:

- 5 *formative* practice problem sets will be set that are optional to submit or not, those who submit get feedback on their solutions and a grade-estimate ranging from A-D,F (i.e. 1st-3rd or fail);
- 1 **summative group project** which will involve modelling and simulation of an environmental economics problem of your own choice during the term, and is assessed via the *individualised submission* of a group project report 2 weeks after the end of term (each member writes their own 'discussion and conclusions section') which counts 30% towards the final mark;
- 1 *unseen written Exam* in the exam period which counts 70% towards the final mark;

### Aims:

The assessment form is chosen in such a way that students will practice the skills and apply the knowledge they have acquired in each problem set. The take-home exam takes *the same form* as the problem sets. The formative problem sets take the same form as the summative problem sets!

The marking scheme of the *group project* involves:

- Assessing the skills listed above under the aims;

The marking of the *exam* involves

- Assessing your understanding and mastery of the knowledge acquired and the ability to use that knowledge in short-answer (A-section) and short-essay (B-section) questions;

### Question:

The group-project is also a great opportunity to develop group-work skills. Is that something you would enjoy?

### Who marks:

The lecturer will mark the group project as well as the exam. That marking is then checked by a second marker from the Department and an external marker.

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## Classes

This course comes without tutorials but instead has 4 contact hours, 2 classes of 2-hours each, every week. The distinction between the 2 classes is roughly:

- **Lectures:** here new material is introduced and discussed and there is Q&A about lecture materials;

- **Practicals:** here we go through examples, practice problems and problem sets;

*All classes are lecturecast!*

**Aims:**

The lectures focus on the knowledge aims of the course. The practicals focus on the skills aims of the course. You get the most from the practicals by having looked at past practice problems and examples prior to attending the class and formulating questions about them.

**Question:**

Student questions are an important part especially of the practicals. As a result this module will work best for you if you enjoy asking questions. Do you think you fit, or would like to try and fit, that profile?

**Office hours:**

The lecturer will have *one* office hours weekly.

## Practice Problems

Every second week there will be a series of practice problems available for you to work and practice with. They will follow the final exam format of an A-section with short-answer questions and a B-section with short-essay questions.

**Aims:**

Practice problems are there for you to practice and train some of the skills you will need in the project and the exams. Submission is optional but those who submit will get feedback and a mark indication on the A-D,F scale.

**Question:**

Ideally you guide your absorption of the lecture material not by reading or re-watching lectures but by working through the practice problems and working on your project. Is this a way of learning that appeals to you?

## How did students to last time?

The distribution of marks in this module does not deviate in any particular way from most 2nd and 3rd year optional modules. That means that between 20%-25% of students will be expected to achieve a 1st class result while the number of failing candidates will typically be expected to land between 0%-7%.