ENVIRONMENTAL ECONOMICS AND SUSTAINABLE DEVELOPMENT (EC240)

Course duration: 54 hours lecture and class time (Over three weeks)

Summer School Programme Area: Economics

LSE Teaching Department: Department of Geography and Environment

Lead Faculty: Professor Eric Neumayer (Dept. of Geography & Environment)

Pre-requisites: Introductory microeconomics, knowledge of differential calculus.

Aims:

This course aims to provide students with a sound knowledge and understanding of the major basic results of environmental economics, covering a wide range of subjects from the economics of pollution control, the economics of natural resource use, sustainable development to international environmental problems, including climate change.

Intended Learning Outcomes:

The course provides the fundamentals of rigorous economic analysis for continued undergraduate studies at a higher level or graduate studies of environmental economics.

Course Description:

Environmental economics is a comparatively young, but by now well-established, branch of economics, which has attracted more and more students. In successfully applying standard microeconomic analysis to the field of natural resources and the environment as well as sustainable development, economists have challenged many erroneous, but strongly held, preconceptions of policy makers and environmentalists alike. For example, the course will show that the efficient level of environmental pollution is, in general, not zero and that there is no risk of running out of fossil fuel non-renewable resources any time soon. Conversely, however, policy makers fail to understand the fundamental drivers behind renewable resource extinction (particularly species loss), are over-optimistic when it comes to the environmental consequences of economic growth and insufficiently grasp the obstacles toward achieving strong multilateral agreements for solving international and global environmental problems.

Diagrams are widely used throughout the course. However, some basic knowledge of partial differential calculus and maximisation techniques is indispensable (see Chiang (1984, pp. 369-378 and 400-402) for what is needed).

The course covers the following topics:

- Environmental externalities and the theory of market failure
- Economics of pollution control
- Economics of natural resource use
- Economics of sustainable development
- Valuation of environmental resources
- Economics of international environmental problems
- Economics of climate change

Text:

There is no single textbook for this course, but students should purchase Barry C. Field and Martha K. Field, *Environmental Economics: An Introduction* (7th edition), McGraw-Hill 2016.

Assessment:

Formative assessment: Mock exam on Friday of week one. Feedback will be given in advance of the mid-session exam.

Summative assessment: Two-hour mid-session exam on Wednesday of week two (50% of overall mark) and two-hour final exam on Friday of week three (50% of overall mark). The precise time and location of these exams will be circulated during the programme.

More detailed course content:

Environmental externalities and the theory of market failure

- The basic environment-economy linkage
- The first theorem of welfare economics and the theory of market failure
- The efficient level of environmental pollution
  Field and Field, ch. 3 and 4

Economics of pollution control

- An Overview
  Field and Field, ch. 9

- Non-interventionist instruments for pollution control: Coase theorem and moral suasion
  Field and Field, ch. 10

- Market-based instruments (I): Taxes and subsidies
  Field and Field, ch. 12

- Market-based instruments (II): Tradable emission permits
  Field and Field, ch. 13

Course content is subject to change.   Last updated: December 2017

Summer
School ■

- Non-market instrument: Command-and-control regulation (CC)
  Field and Field, ch. 11
- The optimal choice between price and quantity controls under uncertainty

Economics of natural resource use

- On property regimes and their effects on the environment
- Fisheries as an example of renewable resource use: private property versus open access
  Hartwick and Olewiler (ch. 4)
- The optimal rate of non-renewable resource use: The Hotelling rule and modifications
  Pearce and Turner (ch. 18); Perman et al. (2011, ch. 15)
- Natural resource availability for sustained economic growth
  Neumayer (2013, pp. 49-78)

Economics of sustainable development

- The concept of sustainable economic development (SD)
  Neumayer (2013, pp. 8-17 and 22-29)
- Measuring weak sustainability
  Neumayer (2013, pp. 147-151)
- Economic growth and the environment
  Neumayer (2013, pp. 78-94), Field and Field (ch. 19)

Valuation of environmental resources

- The basics of Cost-Benefit Analysis (CBA)
- Existence, bequest, option, quasi-option values and valuation techniques
  Field and Field (ch. 7); Perman et al. (2011, ch. 12)
- Compensating Variation, Equivalent Variation, Consumer Surplus, Willingness-to-pay and Willingness-to-accept (formal analysis and diagrams)
  Perman et al. (2003, pp. 403-407), Perman et al. (2011, ch. 12)

Economics of international environmental problems and climate change

- The basic economics of international environmental problems
  Field and Field (ch. 21)
- International environmental problems as games

- A selection of important MEAs

- The economics of climate change and the choice of a social discount rate
  Field and Field (ch. 20); Perman et al. (2011, ch. 9, section 9.5)

- The Kyoto Protocol and multilateral co-operation on climate change

- Investment, trade and environment
  Neumayer (2001, ch. 7), Field and Field (ch. 19)

References

- Chiang, Alpha C. (1984) Fundamental Methods of Mathematical Economics. Third Edition. McGraw-Hill.

- Field, Barry C. and Martha K. Field (2012) Environmental Economics: An Introduction. Sixth Edition, McGraw-Hill.

- Hartwick, John M. and Nancy D. Olewiler (1998): The economics of natural resource use, Second edition, Addison-Wesley.

- Neumayer, E. (2001): Greening trade and investment – environmental protection without protectionism. London: Earthscan.

- Neumayer, E. (2013): Weak versus strong sustainability: exploring the limits of two opposing paradigms, Fourth Edition. Edward Elgar.

- Pearce, David W. and R. Kerry Turner (1990): Economics of Natural Resources and the Environment, New York: Harvester Wheatsheaf.

- Perman, Roger, Yue Ma and James McGilvray (2003): Natural resource & environmental economics, Third Edition, Longman.

- Perman, Roger, Yue Ma and James McGilvray (2011): Natural resource & environmental economics, Fourth Edition, Longman. Electronic access: https://catalogue.lse.ac.uk/Record/1377909

Credit Transfer: If you are hoping to earn credit by taking this course, please ensure that you confirm it is eligible for credit transfer well in advance of the start date. Please discuss this directly with your home institution or Study Abroad Advisor.

As a guide, our LSE Summer School courses are typically eligible for three or four credits within the US system and 7.5 ECTS in Europe. Different institutions and countries can, and will, vary. You will receive a digital transcript and a printed certificate following your successful completion of the course in order to make arrangements for transfer of credit.

If you have any queries, please direct them to summer.school@lse.ac.uk