

Syllabus: Environmental economics

Instructor: Koji Kotani

Office Hour: Thursday from 17:00 to 18:30

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Course synopsis: This course explores the economic foundations for management and public policies of environmental problems such as natural resource depletion, sustainable development, and pollution control. The emphasis of this course is on basic concepts and introduction of analytical tools for policy decision-making as well as generating research in environmental economics. In particular, the course aims to deepen students' understanding of why resource and environmental problems have occurred from the economic point of view and what kind of policy tools, which are provided by economics and management science, should be implemented to solve these problems.

As required knowledge, students should be familiar with microeconomics and mathematics at the level of courses offered in the 1st year at International development program (IDP). Softwares to be used are “microsoft excel” for solving some numerical and optimization problems that arise in environmental economics.

Optional references for the course There is no required textbook. However, for those who are interested in advanced contents, the following textbooks are recommended.

- (Conrad, 1999)—good reference for resource allocation problems and excel programming
- (Field and Field, 2006)—introductory level of environmental economics, which covers many recent case studies such as global warming
- (Kolstad, 2003)—intermediate level of environmental economics
- (Hanley et al., 1997)—advanced level of environmental economics
- (Varian, 2007)—reference for the concept of public goods, market failure and negative externality

Grading policy:

- Take home mid-term exam, 30%

- Take home final exam, 40%
- Problem sets, 30%

Problem sets Problem sets are assigned throughout this course. In total, 6-8 problem sets will be given.

Course structure

Week 1 Introduction to environmental economics

—chapter 1 in (Kolstad, 2003) and chapter 1 in (Conrad, 1999).

Week 2 Renewable resource depletion

—chapter 3 in (Conrad, 1999) and chapter 10 in (Hanley et al., 1997).

Week 3 Non-renewable resource depletion

—chapter 5 in (Conrad, 1999) and chapter 9 in (Hanley et al., 1997).

Week 4 Public & environmental goods, negative externality and market failure

—Read the section of “public goods, negative externalities and market failure” in (Varian, 2007), and chapter 5 in (Kolstad, 2003)

Week 5 Social efficiency and benefit-cost analysis

—chapter 4 in (Kolstad, 2003), chapter 8 in (Field and Field, 2006) and sections 7.1 & 7.2 in (Conrad, 1999)

Week 6 Sustainable development and irreversibility in environmental policy

—Read the article by (Solow, 1993), and section 7.3 in (Conrad, 1999)

Week 7 Command & control and tax & subsidy for pollution control

—chapters 11 & 12 in (Field and Field, 2006), and chapter 8 in (Kolstad, 2003)

Week 8 Marketable permits for pollution control

—chapter 13 in (Field and Field, 2006), and chapter 9 in (Kolstad, 2003)

Week 9 Valuation of environmental goods

—chapter 15 in (Kolstad, 2003)

Week 10 Economics of global warming and Kyoto protocol

—chapters 20 and 21 in (Field and Field, 2006)

References

- Conrad, J. M. (1999). *Resource Economics*. Cambridge University Press.
- Field, B. C. and Field, M. K. (2006). *Environmental economics*. McGraw-Hill/Irwin.
- Hanley, N., Shogren, J. F., and White, B. (1997). *Environmental economics in theory and practice*. Oxford university press, New York.
- Kolstad, C. D. (2003). *Environmental economics*. Oxford university press.
- Solow, R. M. (1993). An almost practical step toward sustainability. *Resources policy*, 19(3):162–172.
- Varian, H. R. (2007). *Intermediate microeconomics: A modern approach*. W. W. Norton & Company.