Macquarie University

Division of Economic and Financial Studies

Econ 359 Environmental Economics 2003

Lecturer-in-charge: Professor Peter Abelson (x8512).

Lecture time / room: Wednesday 1.05 p.m.– 2.55 p.m. Room E7B 100

Introduction to the course

Welcome to Environmental Economics (ECON 359). ECON 359 describes the mainstream economic approach to managing the environment. I hope that you find this a stimulating and useful course.

The course is based on Tietenberg, *Environmental and Natural Resource Economics*. The course starts with a brief discussion of the nature and causes of environmental problems and the application of economic principles to the environment. We then discuss the principles of efficient resource use and efficient control of wastes or pollution. The second half of the course discusses a comprehensive range of environmental problems. Case studies are drawn from Australian and international experience.

The course should interest students who are concerned about some of the fundamental issues facing the world and those with an interest in managing practical environmental problems.

Course Reading

Students should focus on and fully understand the course text by Tietenberg. References are to the sixth edition (2003). However, for most purposes, the fourth edition (1996) and fifth edition (2000) are similar and as useful. In addition, *Environmental Economics and Policy* by T.Tietenberg is almost identical to the textbook. There are many other excellent books on environmental economics (see references).

Course Outline

There will be 12 two-hour lecture sessions starting on Wednesday 1 July and a final revision session. The numbers in brackets by the lecture topics are the relevant chapters in the Tietenberg text (6^{th} edition, 2003). The relevant chapters in earlier editions should be apparent.

There will be five tutorials along with a revision session at the end of the semester, which will be tutorial mode.

Lecture overheads and copies of the main readings (but not of the text) will be provided in the Economics Information and Resource Centre (ERIC). Tutorial subjects will be placed in the ERIC at least one week in advance. The essay assignment will also be available in ERIC.

Course Outline

Week	Date	Lecture / Tietenberg reference (6th ed.)	Tutorial
1	29.07	Nature of environmental issues (1) Social objectives and the environment (2)	
2	06.08	Causes of environmental problems (4) Analytical tools for environmental planning (3)	
3	13.08	Sustainable development (5) Population and the environment (6)	1. Valuing the environment
4	20.08	Efficient and optimal resource use: overview (7,14) Overview non-renewable and renewable resources (7,14)	
5	27.08	Pollution control targets (15) Pollution control instruments (15, 16)	
6	03.09	Air quality: Controlling pollution from stationary sources (16) Energy: efficient resource use	2. Optimal resource use
7	10.09	Air quality: Controlling mobile sources of pollution (18) Regional and global air pollutants - climate change (17)	
8	17.09	Water: efficient use of water resources (10) Water: pollution (19)	3. Air quality
9	24.09	Solid waste management and recycling (13) Management hazardous waste and toxic substances (20)	
10	15.10	Agriculture and the environment (11) Forests: tropical and temperate (12)	4. Water quality
11	22.10	Fisheries (13) Biodiversity	5. Management of solid waste
12	29.10	Accounting for the environment Decision making: justice and uncertainty (21)	
13	05.11	Revision session	

Course Assessment

The course assessment is based on:

- A course essay (20 marks)
- The end of term exam (80 marks)

To pass the course, students must achieve 50 marks or more out of 100 for the whole course and at least 40 marks in the final exam.

The final exam will be three hours and *cover the whole course*. The exam will include 30 multiple choice questions worth 15 marks, 8 short answers based on discussion questions from the Tietenberg text worth a total of 40 marks, and 8 problems worth a total of 25 marks. Note that Tietenberg provides the answers to the problems in the text. All questions must be answered. There will be no choices.

If you are sick and cannot sit the final exam, you are entitled to a supplementary exam. However, in so far as you have more time for the supplementary exam than for the regular exam, you will be expected to achieve a higher standard. If you sit the regular exam, you will be granted a supplementary exam only in exceptional circumstances.

Course Text

T.Tietenberg, 2002, *Environmental and Natural Resource Economics*, 6th edition, Addison Wesley, New York.

Other Main References

(A et al)	Aplin G. et al., *Global Environmental Crises, An Australian Perspective*, 2nd ed. Oxford University Press, Oxford.
(B)	Bartelmus P., 1994, *Environment, Growth and Development: The Concepts and Strategies of Sustainability*, Routledge, London.
(CT)	Callan, S.J and J.M.Thomas, 2004(!), *Environmental Economics and Management*, 3rd edition, Thomson Learning, Ohio.
(HSW)	Hanley, N., Shogren, J.F., and B.White, 2001, *Introduction to Environmental Economics*, Oxford University Press, Oxford.
(P et al.)	Perman, R., Ma, Y., McGilvray. J., and M.Common, 2003, *Natural Resource and Environmental Economics*, 3rd edition, Addison Wesley, New York.
(S ed.)	Sankar, U., (ed), *Environmental Economics*, Oxford University Press, Oxford.

Week	Lecture / Tietenberg reference (6th ed.)	Other main references
1	Nature of environmental issues (1) Social objectives and the environment (2)	
2	Causes of environmental problems (4) Analytical tools for environmental planning (3)	CT (3, 6-9) HSW (3-5) P et al (11-12) S ed. (2, 3, 6, 9).
3	Sustainable development (5) Population and the environment (6)	A et al (2) HSW (6) P. et al (2-4) S. ed. (10).
4	Efficient and optimal resource use: overview (7,14) Overview non-renewable and renewable resources (7,14)	P et al (14-15, S. ed. (4,5).
5	Pollution control targets (15) Pollution control instruments (15, 16)	CT (4,5) P et al (6,7) S. ed. (8).
6	Air quality: Controlling pollution from stationary sources (16) Energy: efficient resource use	CT (10,12), HSW (13)
7	Air quality: Controlling mobile sources of pollution (18) Regional and global air pollutants - climate change (17)	A et al (6) CT (11, 13) HSW (12) S. ed. (13).
8	Water: efficient use of water resources (10) Water: pollution (19)	A et al (4) CT (14-16), HSW (11)
9	Solid waste management and recycling (13) Management hazardous waste and toxic substances (20)	CT (17-19)
10	Agriculture and the environment (11) Forests: tropical and temperate (12)	A et al (3, 5) HSW (10) P et al. (18)
11	Fisheries (13) Biodiversity	HSW (13)
12	Accounting for the environment Decision making: justice and uncertainty (21)	B (2,3) P et al (13, 19) S. ed.(11, 12)
13	Revision session	

Other Readings

Australian Bureau of Statistics, *Australia and the Environment, National State of the Environment Report*, latest publication, ABS 4601.0.

Australian Bureau of Statistics, Environmental Issues People's Views and Practices, 4602.0

Australian Bureau of Statistics, Australian Transport and the Environment Cat. 4605.0

Australian Bureau of Statistics, Australian Agriculture and the Environment Cat. 4606.0

Brown, L.R. et al., annual, *State of the World*, Worldwatch Institute Report on Progress Towards a Sustainable Society, Earthscan Publications, London.

Cropper, M.L. and Oates, T., 1992, "Environmental Economics: A Survey", *Journal of Economic Literature*, Vol.30, 675-740.

Folmer, H., and H.Landis, (eds.), 2000, *Principles of Environmental and Resource Economics*, Edward Elgar.

Lomberg, B., 2001, *The Skeptical Environmentalist: Measuring the Real State of the World*, Cambridge University Press.

NSW Environment Protection Authority, latest, *State of the Environment*, EPA, Sydney.

Pearce, D.W. and J.Warford, 1993, *World Without End, Economics, Environment and Sustainable Development*, Oxford University Press, Oxford.

Productivity Commission, 1999, *Implementation of Ecologically Sustainable Development by Commonwealth Departments and Agencies*, Report No. 5, Ausinfo Canberra.

Tietenberg, T., and H.Folmer, 2000, *International Yearbook of Environmental and Resource Economics*, 2000/2001: a survey of current issues,

World Bank, 1992, *Development and the Environment*, World Development Report 1992, Oxford University Press, Oxford.

Valuation and Cost-Benefit

Abelson, P., 1996, *Project Appraisal and Valuation of the Environment*, MacMillan, London.

Abelson, P., 2000, 'Valuing the public benefits of heritage listing of commercial buildings', Conference on Heritage Economics, Canberra, 2000.

Bateman M., and K.Willis (eds.), 1999, *Valuing Environmental Preferences*, Oxford University Press.

Bateman, I. et al., 2002, *Economic Valuation with Stated Preference Techniques: A Manual*, Edward Elgar, Cheltenham.

Boardman A.E., Greenberg, D.H., Vining, A.R., and D.L.Weimer, *Cost-Benefit Analysis: Concepts and Practice*, Prentice Hall, 2001.

Hausman, J.A. (ed.), *Contingent Valuation: A Critical Assessment*, Elsevier Horth Holland 1993.

Kerry Smith, V., "Nonmarket Valuation of Environmental Resources", *Land Economics*, vol 69, No. 3, 1993, pp. 225-33.

Kneese, A. 1984, *Measuring the Benefits of Clean Air and Water*, Resources for the Future, Washington.

Imber, D., Stevenson, G. and L.Wilks, 1991, *A Contingent Valuation Survey of the Kakadu Conservation Zone*, Resource Assessment Commission, Research Paper No.3.

Resource Assessment Commission, 1991, *Commentaries on the Resource Assessment Commission's Contingent Valuation Survey of the Kakadu Conservation Zone.*

UK Department for Transport, Local Government and the Regions, 2002, *Economic Valuation with Stated Preference Techniques*, written by Pearce, Ozdemiroglu et al.

Natural resource economics

Abelson, P.W., 1989, 'The Sad Truth about Real Commodity Prices', *Economic Papers*, 8(3), 92-98.

Meadows H. et al., 1972, *Limits to Growth*, Universe Books, New York.

Government Pricing Tribunal of NSW, December 1995, *Pricing of Bulk Water Services in NSW*, An Issues Paper, Discussion Paper No.13.

World Resources Institute, annual, *World Resources*, Oxford University Press, Oxford.

Economics of Pollution and Economic Instruments

ABS, 1996, *Expenditure on Pollution Control and Abatement*, AGPS, Canberra.

Button, K., 1993, *Transport, the Environment and Economic Policy*, Edward Elgar, UK.

European Commission, 2001, *Study on the Economic and Environmental Implications of the Use of Environmental Taxes and Charges in the European Union and its Member States*, www.europa.eu.int

Grubb, M., Brack, D. & Vrolijk, C., 1999, *'Kyoto protocol - a guide and assessment'*, Earthscan.

James D., 1997, *Environmental Incentives, Australian Experience with Economic Instruments for Environmental Management*, Environmental Economics Research Paper, No.5, Environment Australia, Canbera.

NSW Environment Protection Authority, 1994, *Using Economic Instruments to Control Pollution in the Hawkesbury-Nepean*, Environmental Economics Series, 94/19, EPA, Sydney.

NSW Environment Protection Authority, 1994, *Using Economic Instruments to Control Vehicle Emissions*, Environmental Economics Series, 94/13, EPA, Sydney.

NSW Environment Protection Authority, 1996, *Metropolitan Air Quality Management Study, Outcomes and Implications for Managing Air Quality*, Paper 96/20.

NSW Environment Protection Authority, 1996, *Developing an Air Quality Management Plan for Sydney, the Illawarra and the Lower Hunter*, Paper 96/22, NSW Government Green Paper.

OECD, 1997, *Environmental Taxes and Green Tax Reform*, Paris.
]
OECD, 1994, *Managing the Environment: the Role of Economic Instruments*, Paris.

O'Riordan, T. (ed.), 1997, *Ecotaxation*, Earthscan Publications.

Sterner, T., (ed.) 1999, *The Market and the Environment, The Effectiveness of Market-Based Policy Instruments for Environmental Reform*, Edward Elgar.

US Environmental Protection Agency, 2001, *The United States Experience with Economic Incentives for Protecting the Environment*, www.epa.gov