

# Macquarie University

## Division of Economic and Financial Studies

### Econ 359 Environmental Economics 2005

<b>Lecturer-in-charge:</b>	Professor Peter Abelson (x8512).
<b>Lecture time / room:</b>	Wednesday 1.05 p.m. – 2.55 p.m. E7B 100
<b>Tutorial times / rooms</b>	Wednesday 4.05, W5A 105; 5.05 C5A 313

#### 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, 2003, *Environmental and Natural Resource Economics* (6th ed.). 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 range of environmental problems. Case studies are drawn from Australian and international experience.

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

#### Staff teaching on ECON 359

Professor Peter Abelson	Room C5C 323	x8512
Professor David Throsby	Room C5C 315	x8474
Assoc.Professor Ron Ripple	Room C5C 308	x8481

Professor Abelson's consultation times are Monday 2.0 - 5.0 p.m. and Wednesday 5.0 – 6.30 p.m.

#### Course Outline

There will be 12 two-hour lecture sessions starting on Wednesday 3 August and a final revision session. The numbers in brackets by the lecture topics are the relevant chapters in the Tietenberg text (6<sup>th</sup> ed.).

There will be five tutorials plus a revision session in the lecture period in week 13 of the semester.

Lecture overheads and some key readings (but not the text) will be provided in the Economics Information and Resource Centre (ERIC). Copyright laws forbid public copying of more than one chapter of a book. Tutorial subjects will be placed in ERIC one week in advance. The essay assignment will also be available in ERIC.

## Course Outline

Week	Date	Lecture / Tietenberg reference (6 <sup>th</sup> ed.)	Tutorial
1	03.08	Nature of environmental issues (1) Social objectives and the environment (2)	
2	10.08	Causes of environmental problems (4) Valuing the environment (3)	
3	17.08	Sustainable development (5) Population and the environment (6)	1. Valuing the environment
4	24.08	Efficient and optimal resource use: overview (7,14 ) Overview non-renewable and renewable resources (7,14)	
5	31.08	Pollution control targets (15) Pollution control instruments (15, 16)	2. Resource scarcity
6	07.09	Energy: scarcity and efficient resource use (8) Air quality: Controlling pollution from stationary sources (16)	Note: Lecturer A/P Ripple
7	14.09	Transport and the environment Air quality: Controlling mobile sources of pollution (18)	3. Pollution policies
		Mid-semester break	
8	05.10	Water: efficient use of water resources (10) Water: pollution (19)	Note: Lecturer Prof. Throsby
9	12.10	Agriculture and environment (11) Climate change (17)	Note: Lecturer Prof. Throsby
10	19.10	Solid waste management and recycling (13) Management hazardous waste and toxic substances (20)	4. Water supply
11	26.10	Fisheries (13) Forests: tropical and temperate (12) and biodiversity	5. Management of solid waste
12	02.11	Decision making: justice and uncertainty (21) Sustainability and development (22, 23)	
13	9.11	Revision session	

## Course Assessment

The course assessment is based on:

- A course essay (25 marks) to be submitted by 12 October
- General tutorial participation (10 marks)
- Answers to tutorial 2 (5 marks): to be handed in on or before tutorials on 31 August
- End of term exam (60 marks)

To pass the course, students must achieve 50 marks or more out of 100 for the whole course and at least 30 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, and 3 essays worth a total of 45 marks. In answering the essays, students will be expected to be able to cite some evidence or issues from supplementary reading.

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, 2003, *Environmental and Natural Resource Economics*, 6<sup>th</sup> edition, Addison Wesley, New York.

## Other Main References

- (A et al) Aplin G. et al., *Global Environmental Crises, An Australian Perspective*, 2<sup>nd</sup> ed. Oxford University Press, Oxford.
- (CT) Callan, S.J and J.M.Thomas, 2004, *Environmental Economics and Management*, 3<sup>rd</sup> 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*, 3<sup>rd</sup> edition, Addison Wesley, New York.
- (S ed.) Sankar, U., (ed), *Environmental Economics*, Oxford University Press, Oxford.

The following schedule shows the major readings for each week. Separate handouts will be provided for the tutorials and the major assignment.

Week	Lecture / Tietenberg major course reference (6 <sup>th</sup> 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	Energy: efficient resource use (8) Air quality: Controlling pollution from stationary sources (16)	CT (10,12), HSW (14)
7	Transport and the environment Air quality: Controlling mobile sources of pollution (18)	CT (11) HSW (9)
8	Water: efficient use of water resources (10) Water: pollution (19)	A et al (4) CT (14-16), HSW (11)
9	Agriculture and the environment (11) Climate change (17)	A et al (3 & 5) HSW (12) CT (13) S. ed. (13).
10	Solid waste management and recycling (13) Management hazardous waste and toxic substances (20)	CT (17-19)
11	Fisheries (13) Forests: tropical and temperate (12) and biodiversity	P et al. (18) HSW (10 & 13)
12	Decision making: justice and uncertainty (21) Sustainability and development (22, 23)	B (2,3) P et al (9, 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

Australian Bureau of Statistics, *Australia's Environment, National State of the Environment, Issues and Trends*, ABS 4613.0.

Bartelmus P., 1994, *Environment, Growth and Development: The Concepts and Strategies of Sustainability*, Routledge, 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.

Freeman A.M.III, 1993, *The Measurement of Environmental and Resource Values, Theory and Methods*, Resources for the Future, Washington D.C.

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

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

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.

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

### **Economics of Pollution and Economic Instruments**

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](http://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, Canberra.

OECD, 1997, *Environmental Taxes and Green Tax Reform*, Paris.

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

Stern, 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](http://www.epa.gov)