



THE UNIVERSITY OF
WESTERN AUSTRALIA
Achieving International Excellence

Unit Outline

ECON8501 Resource and Environmental Economics

(8 Credit Points)

MINE4165 Mining Management

(6 Credit Points)

Semester 2 2009

Crawley

**Unit Coordinator: Associate Professor Paul
McLeod**



Business School

www.business.uwa.edu.au

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Unit Outline for Resource and Environmental Economics / Mining Management

UNIT DESCRIPTION

Introduction

Welcome to Resource Economic 8501 and to the world of resource and environmental economics.

This course builds on conventional microeconomics and welfare economics theory to develop the theoretical and applied tools required in modern resource and environmental economics.

The basic theory of welfare economics, Pareto Optimality and resource allocation efficiency are the building blocks for resource and environmental economics. Much of this will already be familiar to students who have undertaken previous economics studies such as Honours Public Economics or third year Microeconomics. For students who have not had the same exposure, this material will be reviewed in the first part of the course and the associated reading will allow the core theory to be developed to an appropriate level.

Beyond the review of economic principles, the main focus of the course will be specific issues in resource and environmental economics and the models that have been developed to analyse these problems. Particular applications will be considered of the theory as each topic is discussed.

Throughout the course we will see that the application of economics to resource and environmental problems cannot be done in isolation from resources themselves. Arguably it has been the integration of environmental and ecological concepts into economic theory and modifying economic theory as necessary, that has allowed economics to make a major contribution to dealing with many major resource and environmental problems.

Course Objective

The major objective of the course is to further your understanding of the fundamental contribution that advanced microeconomic analysis can make to solving natural resource and environmental management problems.

Most natural resource management problems arise because the sum of the competing demands for the various environmental and consumption services that these resources can supply exceeds the capacity of the natural resources to provide these services over time. The problem in this sense one of allocating scarce natural resources between competing uses.

The core focus of microeconomics is the allocating scarce resources to competing uses and it the microeconomics framework has been demonstrated to be well suited to analysing various natural resource and environmental management issues.

However, it needs to be recognized that the management of natural resources does pose some unique problems and the principles have been adapted to take account of these. It is these aspects that establish natural and resource economics as a distinct area of economics study. Unique natural resources, like canyons and old growth forest, can be irreversibly damaged through use. Resources like fisheries can be sustainably harvested over time whereas for resources like minerals harvesting depletes the resource. Environmental pollution is an interaction between production and consumption activities and the assimilation capacity of the environment.

An understanding of the way microeconomic principles have been developed to deal with these complex issues and how this informs the establishment of appropriate policy frameworks designed to deal with a range of natural resource and environmental management issues will be the major outcome of the course.

Learning outcomes

When you have completed the course you will be expected to have achieved:

- An understanding of the basic Pareto model of efficient resource allocation and the way that this underpins economic thinking in analysing natural resource and environmental problems.
- An understanding of the market failure and externalities approaches to environmental management and the way this underpins tax and standards approaches to policy.
- An understanding of the role that markets can play in allocating environmental resources and why policies such as transferable entitlements are now favoured in many areas.
- An understanding of irreversibility in resource use and its implications for making decisions about the preservation versus exploitation of resources.
- An understanding of the basic economic principles behind the analysis of the optimal harvesting of sustainable resources, and
- An understanding of the basic economic principles underpinning the analysis of the optimal extraction of non renewable resources.
- An understanding of the role that cost benefit analysis and the valuation of environmental benefits and costs plays in policy decisions,

and based on this knowledge

- An ability to identify classes of natural resource management problem and to match the appropriate theory to the problem in the design of appropriate policy solutions.

CONTACT DETAILS

We strongly advise students to regularly access their student email accounts. Important information regarding the unit is often communicated by email and will not be automatically forwarded to private email addresses.

Unit coordinator/lecturer	
name:	Dr Paul McLeod
email:	Paul.McLeod@uwa.edu.au
phone:	6488 2498
fax:	6488 1016
consultation hours:	Monday 12-2:00pm Tuesday 3pm-5pm
lecture & tutorial times and venues:	Please refer to: http://www.timetable.uwa.edu.au/ and http://www.olcr.uwa.edu.au/

UNIT STRUCTURE

Attendance

Participation in class, whether it be listening to a lecture or getting involved in other activities, is an important part of the learning process. It is therefore important that you attend classes (and be on time). More formally, the University regulations state that 'to complete a course or unit students shall attend prescribed classes, lectures, seminars and tutorials'.

LECTURE SCHEDULE

Week	Date of Lecture	Lecture Topic
1	20 th July	Introduction to unit – the interaction between the economy and natural resources and the environment
2	27 th July	The economic approach to sustainability
3	3 rd August	Welfare economics foundations of resource and environmental economics
4	10 th August	Environmental pollution Part 1 – pollution as an externality
5	17 th August	Environmental pollution Part 2 –environmental standards and marketable permits as solutions to externality problems
6	24 th August	Environmental pollution Part 3 – climate change as an externality problem and the role of carbon taxes and carbon trading in dealing with it
7	31 st August	Depletable resources 1 – economics of the mine
Mid Semester Break		
8	14 th September	Depletable resources 2 – optimal depletion of a mineral resource, optimal; taxation of a mineral resource
9	21 st September	Renewable resources 1 – bioeconomic model of the fishery
10	28 th September	Renewable resources 2 – optimal management of the fishery
11	5 th October	Allocation of finite harvests – allocation of fish and water harvests
12	12 th October	Cost benefit analysis and resource economics 1- Irreversibility and the choice of the social discount rate
13	19 th October	Cost benefit analysis and resource economics 2- Valuing natural resources – contingent valuation and travel cost methods

TEACHING AND LEARNING RESPONSIBILITIES

Teaching and learning strategies

Beside lectures, the main learning instrument in this course is the essay where you will have an opportunity to develop your interpretative and analytical skills in resource economics.

The essay is to be chosen from a number of topics that will be provided to you during the third week of class.

The topics will be of an applied nature. The idea of the essay is to allow students to demonstrate how well they have mastered the application of economic theory to resource and environmental policy areas. In particular the essay will require you to;

- Select an applied topic (eg climate change policies)
- Choose an appropriate theoretical construct (e.g marketable permits)
- Demonstrate why the chosen theory is appropriate and
- How it can be used to develop policy solutions to dealing with the nominated problem.
- How it has been applied in designing policy solutions dealing with the nominated problem.

The list of topics provided are suggestions. You will also be free to nominate a topic of your choice but approval for the nominated topic will be required. If you nominate your own topic, the exact topic must be agreed with me prior to commencing work on the essay.

Note: Results may be subject to scaling and standardisation under faculty policy and are not necessarily the sum of the component parts.

Charter of student rights and responsibilities

This Charter of Student Rights and Responsibilities upholds the fundamental rights of students who undertake their education at the University of Western Australia.

It recognises that excellence in teaching and learning requires students to be active participants in their educational experience. It upholds the ethos that in addition to the University's role of awarding formal academic qualifications to students, the University must strive to instil in all students independent scholarly learning, critical judgement, academic integrity and ethical sensitivity.

Please refer to the Academic Secretariat website for the full charter of student rights, located at <http://www.secretariat.uwa.edu.au/home/policies/charter>

Teaching and learning evaluation

You may be asked to complete two evaluations during this unit. The Student Perception of Teaching (SPOT) and the Students' Unit Reflective Feedback (SURF). The SPOT is optional and is an evaluation of the lecturer and the unit. The SURF is completed online and is a university wide survey and deals only with the unit. You will receive an email from the SURF office inviting you to complete the SURF when it is activated. We encourage you to complete the forms as your feedback is extremely important and can be used to make changes to the unit or lecturing style when appropriate.

ASSESSMENT MECHANISM

The purpose of assessment

There are a number of reasons for having assessable tasks as part of an academic program. The assessable tasks are designed to encourage you to explore and understand the subject more fully. The fact that we grade your work provides you an indication of how much you have achieved. Providing feedback on your work also serves as part of the learning process.

Assessment mechanism summary

The recommended assessment is as follows:

Item	Weight	Due date	Remarks
Essay	30%	TBA	
Final exam	70%	TBA	3 hours

Note 1: Results may be subject to scaling and standardisation under faculty policy and are not necessarily the sum of the component parts.

Note 2: The grade FC indicates failure to complete an identified essential assessment component and means failure of the unit.

Submission of assignments

The essay assignment for this course should be lodged online through the WebCt course page.

Standard of Assessment

The Business School must ensure that the processes of assessment are fair and are designed to maintain the standards of the School and its students. The School follows the University of Western Australia's grading system:

HD	(Higher distinction)	80-100%
D	(Distinction)	70-79%
CR	(Credit pass)	60-69%
P	(Pass)	50-59%
N+	(Fail)	45-49%
N	(Fail)	0-44%
FC	(Failed component)	

The School awards marks leading to these grades by using the following general criteria which are presented here as a clear indication of the School's expectations. These general criteria may be supplemented by specific standards with regard to a particular assignment.

- HD** The student has a clear understanding of theory, concepts and issues relating to the subject and is able to adopt a critical perspective. The student is able to clearly identify the most critical aspects of the task and is able to offer a logically consistent and well articulated analysis within the analytic framework presented in the unit. The student is able to draw widely from the academic literature and elsewhere but maintains relevance.
- D** The student has a clear understanding of theory, concepts and issues relating to the subject. The student is able to develop an analysis of an issue using the analytic framework presented in the unit and is able to identify and evaluate the critical issues. The student is able to draw upon relevant academic and other material.
- CR** The student demonstrates an understanding of the analytic framework developed in the unit and a partial understanding of concepts and issues. The student is able to identify some key issues and is able to present a logical discussion, but with some conceptual errors or gaps between analysis and conclusions. The student is able to draw upon an adequate range of references and other materials.
- P** The student generally takes a descriptive rather than analytic approach to the subject. The student is able to demonstrate some understanding of the issues involved but does not demonstrate the ability to apply the analytic framework which had been developed in the unit. Draws primarily upon unit materials for referencing.
- N+** The student is unable to demonstrate that he or she understands the core elements of the subject matter. The student is able to provide some insight into issues but misapplies analytic framework developed in the unit, omitting key factors and, for example, drawing conclusions which are not related to the preceding discussion.
- N** The student is unable to demonstrate any understanding of the subject matter. Material presented for assessment is unrelated to unit framework and shows no effort to identify or address critical aspects of the topic.
- FC** Failure of the unit due to failure to complete an identified essential assessment component.

The scaling of marks to ensure comparability between classes is an acceptable academic practice. The School and Board of Examiners have the right to scale marks where it is considered necessary to maintain consistency and fairness.

Special Consideration and Deferred Exams

If something exceptional and beyond your control has interfered with your ability to study in the normal way you should consider completing an application for special consideration. The forms can be obtained at the Undergraduate Student Centre or Postgraduate Student Centre, or from the Student Administration website <http://www.studentadmin.uwa.edu.au/welcome/forms>

In exceptional circumstances you can also apply for a deferred mid-semester/trimester exam or a deferred end of semester/trimester exam within three (3) university working days from the date of the exam. Application forms can be obtained at the Undergraduate Student Centre or Postgraduate Student Centre.

A student may be granted a deferred examination in one or more of their units if the Sub-Dean of the Business School is satisfied that on the basis of medical or other exceptional reasons the candidate was either:

- substantially and unusually hindered in their preparation for an examination; or
- unavoidably absent from or unable to complete an examination.

Further information concerning Special Consideration and Deferred Examinations is available on the Business School website

<http://www.business.uwa.edu.au/studentnet/assessments>

Supplementary Assessment

Supplementary Assessment is not offered by the Business School, however, students who achieve a grade between 45-49 in the last unit for their undergraduate degree taken in the last semester of study, will be eligible for a supplementary assessment.

Ethical Scholarship, Academic Literacy and Academic Misconduct

Ethical scholarship is the pursuit of scholarly enquiry marked by honesty and integrity.

Academic Literacy is the capacity to undertake study and research, and to communicate findings and knowledge, in a manner appropriate to the particular disciplinary conventions and scholarly standards expected at university level.

Academic misconduct is any activity or practice engaged in by a student that breaches explicit guidelines relating to the production of work for assessment, in a manner that compromises or defeats the purpose of that assessment. **Students must not engage in academic misconduct.** Any such activity undermines an ethos of ethical scholarship. Academic misconduct includes, but is not limited to cheating, or attempting to cheat, through:

- Collusion
- Inappropriate collaboration
- Plagiarism
- Misrepresenting or fabricating data or results or other assessable work
- Inappropriate electronic data sourcing/collection
- Breaching rules specified for the conduct of examinations in a way that may compromise or defeat the purposes of assessment.

Penalties for academic misconduct vary according to seriousness of the case, and may include the requirement to do further work or repeat work; deduction of marks; the award of zero marks for the assessment; failure of one or more units; suspension from a course of study; exclusion from the University, non-conferral of a degree, diploma or other award to which the student would otherwise have been entitled. Refer to the Ethical Scholarship, Academic Literacy and Academic Misconduct located on the University's website at http://www.teachingandlearning.uwa.edu.au/tl4/for_uwa_staff/policies/student_related_policies/academic_conduct

Academic Conduct Essentials (ACE)

All newly enrolled students are required to complete a short compulsory online unit called *Academic Conduct Essentials (ACE)* within the first 10 weeks of semester. ACE introduces students to essential knowledge regarding ethical scholarship, it helps prepare them for the expectations they will need to meet during their university career and it informs them of correct academic conduct.

ACE can be accessed via WebCT (<http://webct.uwa.edu.au>). In order to pass the unit, the unit quiz must be completed with a mark of 80% or greater. To gain the required pass mark students may attempt the quiz as many times as they wish. Completion of the unit will be recorded as an Ungraded Pass (UP) on the student's academic record. Non-completion (NC) within the required timeframe will also be documented on formal academic records (ie, in either case the grade will appear on transcripts). More information on ACE is available at <http://ace.uwa.edu.au>

Acknowledging sources of information

In the course of your individual and team work assignments, you will encounter ideas from many sources. These will include journal and newspaper articles, commentaries, books, web sites and other electronic sources, original case sources, lecture materials. All assignments that you submit **must** acknowledge all the different sources you have used. Not to acknowledge your sources is plagiarism, a form of dishonesty. Plagiarism is the misappropriation of the work or ideas of others and presenting them as your own. This is reprehensible from both an ethical and legal viewpoint. Neither the School nor the University accepts ignorance or the fact that a student's previous acts of plagiarism had been undetected as a defence.

In order to avoid engaging in plagiarism it is **your** responsibility to acknowledge all of your sources in any work submitted for assessment and it is essential that you reference the work of others correctly. Where you quote directly from a source, you must ensure that any direct quotations are placed in quotation marks and are fully referenced. Even when you do not quote directly and are just referring to or expanding on the work of others, you must still acknowledge the sources of your information and ideas. Close paraphrasing in which you change a few phrases around, leave a clause out of a long sentence or put the original sentences in a different order is still plagiarism. To mark words as a quotation the entire text that has been copied should be enclosed within the quotation marks. If the copied text is four or more lines in length, it may be more appropriate to set it as a separate and indented paragraph. Each time that text is copied, the source must be acknowledged with a reference citation, including the page number.

If you have any doubts concerning appropriate referencing formats or how to acknowledge the work of others correctly, you should seek the advice of your lecturer.

The Business School has the following regulation on Plagiarism:

“The Faculty will promote the highest levels of probity and honesty amongst students and will provide instruction on ethical conduct. By submitting assignments and other work for assessment, students acknowledge Faculty's duty to guard against plagiarism, including by electronic means such as Turnitin or Mydropbox. A lecturer may require students submitting written or electronic work to sign a Plagiarism Declaration Form indicating that the work is original.”

Referencing

It is important that the referencing of any sources used in your written work is done properly, if only to substantiate the points you are making in your assignment or project. The Harvard style is the preferred and there are some notes for guidance which have been prepared by the library staff: ‘Citing your Sources Harvard Style’

www.library.uwa.edu.au/education_training___and___support/guides/how_to_cite_your_sources/citing_your_sources_-_harvard_style

EndNote is a really good system for building up a database of references. Not everyone will want to invest the time in using this system but you should consider it if you intend to build up resource materials or plan to undertake extensive research in a particular area. The library staff have also developed a tutoring package: ‘A Quick Guide to Using EndNote’ which provides the basics for using EndNote with an essay <http://libguides.library.uwa.edu.au/endnote>

Appeals against academic assessment

In the first instance, students are strongly advised to talk informally to the lecturer about the grade awarded. The University provides the opportunity for students to lodge an appeal against any mark which he or she feels is unfair. Any student making an appeal is under an obligation to establish a prima facie case by providing particular and substantial reasons for the appeal. It is recommended that students contact the Guild Education Officers to aid them in the appeals process.

There is a 20 day time limit for making any such appeal. An appeal against academic assessment may result, as appropriate, in an increase or decrease in the mark originally awarded. The University regulations relating to appeals and the form on which the appeal should be lodged can be found at

<http://www.secretariat.uwa.edu.au/home/policies/appeals>

Student Guild contact details

The University of Western Australia Student Guild

35 Stirling Highway

Crawley WA 6009

Phone: (+61 8) 6488 2295

Facsimile: (+61 8) 6488 1041

E-mail: enquiries@guild.uwa.edu.au

Website: <http://www.guild.uwa.edu.au>

TEXTBOOK(S) & RESOURCES

Unit Website

A variety of material for the course will be made available through WebCt. This will include;

- Reading lists for each topic
- Essay topics and guide
- Reading material in PDF format
- Lecture slides (powerpoint or other)

All students in Resource Economics (ECON8501) and Mining Management (MINE4165) have now been authorised for the site. You access Webct via your normal Webct student login and the course should be available to you.

<http://www.webct.uwa.edu.au>

Recommended/required text(s)

The recommended text is:

Perman, R. et al Natural Resource and Environmental Economics, 3rd ed. London: Addison-Wesley. 2003.

There will be chapters from this book prescribed for all sections of the course.

Other References

There are a number of excellent books in Resource and Environmental Economics. They operate at various levels of technical and mathematical complexity. Some focus on graphical analysis and basic principles whereas others favour mathematical analysis. The following is a list of very good backup books which cover relevant material for the course.

You should scan these texts and seek one that suits – a little more graphical/descriptive or a little more mathematical depending on your background and use in tandem with the main text.

You can check with me as to whether any particular book outside of this list is a good reference for you to use.

Pearce D.W and Turner R K, *Economics of Natural Resources and the Environment*, London: WHeatsheaf, 1st or 2nd editions.

Excellent and comprehensive – mostly graphical – chapters on environmental economics and theory of sustainability very good.

Hartwick, J.M. and N.D.Olewiler, *The Economics of Natural Resource Use*, New York: Harper and Row, 1986 or 1998.

Especially good on natural resources – fisheries economics, minerals economics and optimal mineral depletion

Tietenberg, T. *Environmental and Natural Resource Economics*, New York: Harper Collins, 5th of 6th edition.

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Not as analytical as the other two. Comprehensive and a great overview of the field. Especially good for an overview/policy perspectives on a range of topics.

A range of journal articles will be required reading for the course. These will be referred to in the reading lists, and will be available in the journals in the library. Most will be available electronically (e.g. in JSOR in the Library). Where required they will be made available to you via the WEBCT site for the course.

A number of journals exist dealing largely with resource related issues. In addition to the reading lists that will be handed out for each topic, students are encouraged to use these to seek out relevant material. These include:

- Journal of Environmental Economics and Management
- Land Economics
- Resources Policy
- Natural Resource Journal.

Reserve Collection

Supplementary texts should be available from the reserve collection. Note that the books may be in the Reid library or the Biol Sciences Library as resource economics texts are split between the two.

Approved calculators for examinations

The University only permits the use of calculators in examinations when the calculator has an approved sticker. If the student does not have an approved sticker on their calculator, they will not be permitted to use the calculator. Since this is a University wide policy it is not possible for unit coordinators to grant on the spot exemptions. Calculators can be approved at the Undergraduate Student Centre or Postgraduate Student Centre. Further information is available on the Business School web site, see <http://www.business.uwa.edu.au/studentnet/assessments>.