Environmental Science

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Course Website: http://sydney.edu.au/science/environmental_science/
Faculty Handbook: http://sydney.edu.au/handbooks/science/

Course Codes:

LG028 Graduate Certificate in Environmental Science

LF044 Graduate Diploma in Environmental Science

LC056 Master of Science in Environmental Science

Graduate Certificate in Environmental Science

To qualify for the Graduate Certificate in Environmental Science a candidate must complete 24 credit points, including:
(a) 6 credit points of core unit of study; and
(b) 18 credit points of elective units of study.

Graduate Diploma in Environmental Science

To qualify for the Graduate Diploma in Environmental Science a candidate must complete 36 credit points, including:
(a) 18 credit points of core units of study, and
(b) 18 credit points of elective units of study.

Master of Science in Environmental Science

To qualify for the Master of Science in Environmental Science *coursework pathway* a candidate must complete 48 credit points, including:

(a) 24 credit points of core units of study;
(b) 24 credit points of elective units of study.
(5) Subject to the availability of supervision and suitable projects, candidates with a credit average in 24 credit points of study from the degree may be admitted to the research pathway.

To qualify for the Master of Science in Environmental Science *research pathway* a candidate must complete 48 credit points, including:

(a) 30 credit points of core units of study;
(b) 18 credit points of elective units of study.

The units of study that may be taken for these awards are set out in the table for Environmental Science postgraduate courses. With the approval of the Dean and the program coordinator, candidates for the graduate diploma or master's degree, who have special aims

or interests, may be allowed to substitute up to 12 credit points with relevant postgraduate units from outside the table.

Example Study Plans

Example Graduate Certificate in Environmental Science

SEMESTER 1	
CORE: ENVI5708 (6cp) Introduction to Environmental Chemistry	ELECTIVE: ENVI5705 (6cp) Ecological Principles
SEMESTER 2	
ELECTIVE: ENVI5707 (6cp) Energy - Sources, Uses and Alternatives	ELECTIVE: ENVI5904 (6cp) Methods in Applied Ecology

Example Graduate Diploma in Environmental Science

SEMESTER 1		
CORE: ENVI5708 (6cp) Introduction to Environmental Chemistry	CORE: ENVI5705 (6cp) Ecological Principles	ELECTIVE: MARS5001(6cp) Coastal Processes and Systems
SEMESTER 2		
ELECTIVE: ENVI5707 (6cp) Energy - Sources, Uses and Alternatives	ELECTIVE: ENVI5904 (6cp) Methods in Applied Ecology	CORE: GEOS5501 (6cp) Human Rights and the Environment

Example Master of Science in Environmental Science (research pathway)

SEMESTER 1			
CORE: ENVI5708 (6cp) Introduction to Environmental Chemistry	CORE: ENVI5705 (6cp) Ecological Principles	ELECTIVE: GEOG5001 (6cp) Geographic Information Science A	ELECTIVE: ENVI5801 (6cp) Social Science of Environment
SEMESTER 2			
CORE: AFNR5801 (6cp) Climate Change: Processes, History, Issues	ELECTIVE: ENVI5904 (6cp) Methods in Applied Ecology	CORE: ENVI5501 (12cp) Environmental Research Project	

Example Environmental Science (coursework pathway)

SEMESTER 1			
CORE: ENVI5708 (6cp) Introduction to Environmental Chemistry	CORE: ENVI5705 (6cp) Ecological Principles	ELECTIVE: GEOG5001 (6cp) Geographic Information Science A	ELECTIVE: ENVI5801 (6cp) Social Science of Environment
SEMESTER 2			
CORE: RESP5001 (6cp) Integrated Environmental Practice	CORE: AFNR5801 (6cp) Climate Change: Processes, History, Issues	ELECTIVE: ENVI5904 (6cp) Methods in Applied Ecology	ELECTIVE: ENVI5707 (6cp) Energy - Sources, Uses and Alternatives

Units of study table

Not all units of study may be available every semester. The faculty may allow substitution of any unit of study by an approved unit of study, including units of study from other postgraduate coursework programs in the faculty or elsewhere in the University.

Unit of study	*Credit points*	*A: Assumed knowledge P: Prerequisites C: Corequisites N: Prohibition*	*Session*
Core Units			
Students in the graduate certificate must complete at least 6 credit points of the following core units.			
Students in the graduate diploma must complete at least 18 credit points of the following core units.			
Students in the master's degree must complete at least 18 credit points of the following core units.			
AFNR5801 Climate Change: Process, History, Issues	6	**A** A basic understanding of climate change processes and issues.	Semester 2
ENVI5705 Ecological Principles	6		Semester 1
ENVI5707 Energy - Sources, Uses and Alternatives	6	**A** A basic understanding of HSC-level General Mathematics or equivalent.	Semester 2
ENVI5708 Introduction to Environmental Chemistry	6	*Note: This is a compulsory course for the Grad Dip and Masters levels of the Applied Science (Environmental Science) program*	Semester 1
ENVI5801 Social Science of Environment	6		Semester 1
ENVI5904 Methods in Applied Ecology	6		Semester 2
Additional Core Unit: Masters (Coursework Pathway)			
Students in the master's degree (coursework pathway) must complete RESP5001.			
RESP5001 Integrated Environmental Practice	6		Semester 1 Semester 2
Additional Core Unit: Masters (Research Pathway)			
Students in the master's degree (research pathway) must complete ENVI5501.			

ENVI5501 Environmental Research Project	12	**P** 24 credit points of study with a distinction average or better	Semester 1 Semester 2
Elective Units			
AFNR5511 Soil Processes, Assessment & Management	6		Semester 1
AFNR5512 Water Management and Variable Climate	6	**A** UG Maths or Physics or Hydrology	Semester 2
CIVL5665 Advanced Water Resources Management	6	**A** CIVL3612.	Semester 2
ENVI5809 Environmental Simulation Modelling	6		Int June
ENVI5903 Sustainable Development	6	*Note: Department permission required for enrolment*	Int July
GEOG5001 Geographic Information Science A	6		Semester 1
GEOG5004 Environmental Mapping and Monitoring	6		Semester 2
GEOS5501 Human Rights and the Environment	6		Semester 2
MARS5001 Coastal Processes and Systems	6		Semester 1
MARS5006 Coral Reefs, Science and Management	6	*Note: Department permission required for enrolment* *Department permission is required to enrol in this unit.*	Semester 1
MARS5007 Coral Reefs and Climate Change	6	*Note: Department permission required for enrolment*	Semester 1a
PHYS5031 Ecological Econ & Sustainable Analysis	6	**A** A three year Bachelor's (pass) degree with some quantitative work, such as economics, science or engineering.	Semester 1
PHYS5034 Life Cycle Analysis	6	**A** A Bachelor's degree with some quantitative work, such as economics, science or engineering. Basic knowledge in mathematics is desirable. *Minimum class size of 5 students.*	Semester 2

RSEC5432 Environmental Economics	6		Semester 2
WILD5001 Australasian Wildlife: Introduction	6		Int August
WILD5002 Australasian Wildlife: Field Studies	6		Int Sept

Unit of study descriptions 2014

AFNR5511 Soil Processes, Assessment & Management

Credit points: 6 **Session:** Semester 1 **Classes:** 1 Lec, 2 tutorials/wk, case study & on-line discussions. **Assessment:** Key soil processes essay (20%), On-line discussions (10%), Case study report (50%), Group presentation (20%).
Soils support agricultural and natural ecosystems and regulate environmental interactions between the hydrosphere and atmosphere. It is the quality of our soils that affect productivity, the environment, health and ultimately sustainability. However, challenges such as those presented by lack of plant nutrient supply, soil acidification, physical degradation, soil contamination, and loss of soil biodiversity are problems at a global scale that threaten the sustainability of the environment and society. As well as the threats the importance of maintaining a quality soil that regulates environmental interactions will be explored, such as soil as a sink for carbon affecting climate interactions or understanding how a rich soil biodiversity can contribute to food production affecting food security. To do this, this unit of study is concerned with exploring the key pedology, soil chemistry, soil physical and soil biological processes that drive these challenges to soil quality. Time will be spent investigating how the quality of the soil can be assessed, using the indicators of the mentioned soil processes, and how the resulting data can be aggregated and communicated in a meaningful way. Working with case studies, the students will identify problems that are assessed using soil quality or function analysis with the aim of identifying management options. The management options will be evaluated to determine their adoptability and implement ability. By investigating the case studies using soil quality or function analysis students will develop their research and enquiry skills. Assessing and developing adoptable management strategies the students will develop their skills in synthesising material from multiple sources and enhance their intellectual autonomy. By producing reports and presenting seminars the students will develop their communication skills.
Textbooks
D. Hillel, 2004. Introduction to Environmental Soil Physics, Elsevier Science, San Diego, CA USA.

AFNR5512 Water Management and Variable Climate

Credit points: 6 **Session:** Semester 2 **Classes:** 1hr workshop/week, online practical work, project work **Assumed knowledge:** UG Maths or Physics or Hydrology **Assessment:** Online quizzes (20%), project report (30%), 2 hr exam (50%).
This unit builds on knowledge gained in undergraduate soil science and crop science units to develop an understanding of field level management. Particular focus will be on the effect of climate variability and change on water management decisions at the field and farm scale in relation to farm output and externalities (Salinity, nutrient losses). At the completion of this unit student would be able to: Identify which climate variables will be most affected by climate change and variability; Evaluate which field and farm scale outputs will be most affected by climate change and variability; Develop scenarios based on distributions of climate variability; and Calculate the likely impacts of climate variability and change on crop production and externalities in irrigated systems using Monte Carlo techniques.
The open source software package R (www.r-project.org) will be used for most analysis and other open source software will be used for crop modelling.

Textbooks
Beven, K.J. Rainfall-Runoff modeling, The Primer, John Wiley and Sons, Chichester, 2001Kumagai. M. and Warwick, W. F. 2003. Freshwater management: Global versus local perspectives, Springer-Verlag, Tokyo.

AFNR5801 Climate Change: Process, History, Issues

Credit points: 6 **Session:** Semester 2 **Classes:** 18 hrs lecture/tutorial, 12 hrs practical/field classes, 9 hrs field trip preparation **Assumed knowledge:** A basic understanding of climate change processes and issues. **Assessment:** 2hr exam (40%), tutorials (20%), practical report from field exercise (manuscript format) (40%).
This unit provides students with an overview of current debates and approaches to understanding and quantifying interactions between the biosphere, oceans and atmosphere, as used around the world, and the consequences of those interactions for climate. The unit considers climate change on a variety of timescales.
This unit will include a weekend field trip to Snowy Mountains field sites managed by the University of Sydney where students will be introduced to cutting edge, ongoing climate change research.
Textbooks
A reading list will be provided consisting of selected book chapters, journal articles and other publications

CIVL5665 Advanced Water Resources Management

Credit points: 6 **Session:** Semester 2 **Classes:** 2 hours of lectures and 1 hour of tutorials per week **Assumed knowledge:** CIVL3612. **Assessment:** Through semester assessment (50%), Final Exam (50%).
The objective of this unit of study is to introduce students and professionals to water resources engineering. The aim of this unit is to provide an understanding of: hydrologic cycle from the broadest perspective, physical, chemical and biological characterization of water, how to change the water quality parameters, water quality control and management, water quality in the environment, nutrient and contaminant cycling and removal, water treatment methods for drinking, wastewater and groundwater, conservation/reuse/treatment techniques, desalination, stormwater, bioremediation and phytoremediation techniques. The topics mentioned above will be covered in both a qualitative and quantitative aspects.

ENVI5501 Environmental Research Project

Credit points: 12 **Session:** Semester 1, Semester 2 **Classes:** Meetings arranged with supervisor. **Prerequisites:** 24 credit points of study with a distinction average or better **Assessment:** Written report and continuous assessment (100%)
A valuable opportunity to apply some of the knowledge gained from earlier coursework, ENVI5501 consists of a research project as arranged between you (the student) and an appropriate supervisor. The project topic may contain a field or laboratory component, or may be entirely literature-based, but it must include an integrated analysis of an identified environmental problem. Potential topics range from ecotourism to pollution detection and monitoring, erosion to solar power, environmental law to conservation biology. The topic must be able to be completed within the timeframe of 16 weeks (one semester) of investigation, including the literature survey, sample and data collection, analysis of data and results, and write up of the report. This unit is not conducted by way of a number of contact hours per week for a semester. Instead, the student will work on the project full-time (aside from other study commitments) in a continuous manner for the entire duration (1 semester). This unit of study is only available to students in the Master programs who have completed 24 credit points of study with a distinction average or better. Any student interested in taking ENVI5501 should identify and consult with an appropriate supervisor along with Environmental Science Program Coordinator Dr Jeff Neilson (jeffrey.neilson@sydney.edu.au) well before the semester commences.

ENVI5705 Ecological Principles

Credit points: 6 **Session:** Semester 1 **Classes:** One 3-hour lecture per week. **Assessment:** Case study, assignment, critical review, presentation (100%)
This unit of study introduces fundamental concepts of modern ecology for environmental scientists through a series of modules focussing on applied questions. Using case studies

from Australia, students are exposed to the challenges of doing ecology and how cutting edge research is being applied to environmental management using evidence-based approaches. Meetings and discussions with people working in the field give students an insight into the ways that ecologists address ecological problems and how way they generate an understanding of natural systems. Students have the opportunity to consider different ways of doing science and ways of dealing with different kinds of data, including qualitative, quantitative, anecdotal and experimental approaches.

ENVI5707 Energy - Sources, Uses and Alternatives

Credit points: 6 **Session:** Semester 2 **Classes:** 2-hour lecture, 1-hour seminar per week and field trips. **Assumed knowledge:** A basic understanding of HSC-level General Mathematics or equivalent. **Assessment:** Major essay, assignments, tutorial paper and presentation (100%).
The environmental impacts and physical principles of energy generation and use are addressed in this unit of study. Major topics include discussion of the various energy sources, global energy resources, the economics associated with energy conversion, the politics and culture that surround energy conversion and use, and renewable energy technologies. A key aspect of the unit is the fostering of skills for performing simple but useful energy and greenhouse calculations. This unit of study includes several field trips to energy utilities and associated energy sites.

ENVI5708 Introduction to Environmental Chemistry

Credit points: 6 **Session:** Semester 1 **Classes:** One 2-hour lecture and one practical per week; one field trip **Assessment:** Presentation (20%), Report (80%).
The aim of the course is to introduce students to the major physical and chemical processes that control the concentration and dispersion of chemical pollutants in natural and impacted environments. The course will demonstrate how to use contaminant data effectively and how to judge the quality of chemical data. This knowledge will be used to design and to assess environmental projects, and to judge the magnitude of impact by human activity on environments and the risk posed by contaminants to ecosystem functioning. The course aims to provide present and future managers employed in environmental professions with the skills to use data with confidence and to make management decisions knowing the risks inherent in variable data quality. A field trip will be undertaken early in the semester.

ENVI5801 Social Science of Environment

Credit points: 6 **Session:** Semester 1 **Classes:** One hour lecture and one hour seminar per week plus directed reading. **Assessment:** Essays and seminar participation (100%).
This unit provides both a conceptual and an empirical foundation for the analysis of relationships between society, the environment and natural resources. In our recent past the rapid rate of global environmental change has necessitated a breakdown of traditional disciplinary boundaries in research and social scientists are increasingly called upon to work alongside natural scientists in unraveling the complexities of the human-environmental nexus. Students will examine a number of environmental issues and consider a variety of social science academic perspectives about environmental management.

ENVI5809 Environmental Simulation Modelling

Credit points: 6 **Session:** Int June **Classes:** Six sessions **Assessment:** Report (100%)
This unit of study introduces participants to the power of simulation modelling in understanding and predicting behaviour of natural systems. It covers fundamental concepts, logic, and techniques (including sensitivity analysis), and develops skills in application to environmental problems such as catchment management and population dynamics.

ENVI5903 Sustainable Development

Credit points: 6 **Session:** Int July **Classes:** Two pre-departure lectures, 14-day field intensive. **Assessment:** Essay (100%)
This unit of study constitutes an international field-based experience held in Indonesia during the July semester break. It explores the contested notions of sustainable development and sustainability through exposure to real world development dilemmas in one of Asia's most dynamic countries. We explore fundamental issues such as urbanization, resource scarcity

and economic globalization. The unit of study involves lectures, in-situ readings and discussion groups, introduction to field methods, stakeholder meetings and experiential learning. Students interested in this unit should confirm their interest to the Unit Coordinator by the end of March of the year the field school will be held. There will be additional costs associated with this unit to cover food, accommodation, local transport and field assistance of about $1200 Students will also be required to arrange their own international travel to the starting point (either Bangkok or Jakarta).

ENVI5904 Methods in Applied Ecology

Credit points: 6 **Session:** Semester 2 **Classes:** One 3-hour lecture per week for 8 weeks. **Assessment:** Tutorials, oral presentations and written reports (100%).
No assessment of potential environmental impacts is possible without relevant information about the ecological consequences. This unit is for those without a quantitative ecology background, to explain the need to quantify and what are relevant measures. Describing and understanding uncertainty will be explained in the context of precautionary principles. Issues about measuring biodiversity and the spatial and temporal problems of ecological systems will be introduced. Field experience will also be available (up to two of six hour sessions) subject to weather, tides and available staffing; please note that these sessions are voluntary.

GEOG5001 Geographic Information Science A

Credit points: 6 **Session:** Semester 1 **Classes:** Six lectures plus six workshops. **Assessment:** Report (100%)
This unit of study gives an overview of basic spatial data models, and enables students to understand the use of data from a variety of sources within a geographical information system (GIS). The analysis of spatial data, and its manipulation to address questions appropriate to planning or locational applications, will be addressed, as will the development of thematic maps from diverse data layers.

GEOG5004 Environmental Mapping and Monitoring

Credit points: 6 **Session:** Semester 2 **Classes:** 2 hours of lectures and one three hour practical per week. **Assessment:** Assignments (100%).
The unit introduces methods associated with acquiring data in the field and examines issues associated with application of spatial data to environmental monitoring, terrain mapping and geocomputing. Students will learn both theoretically and practically how environmental data is collected using different remote sensing techniques, (pre)processing methods of integrating data in a GIS environment and the role of spatial data in understanding landscape processes and quantifying environmental change.

GEOS5501 Human Rights and the Environment

Credit points: 6 **Session:** Semester 2 **Classes:** Two hours of class contact per week plus self-directed study **Assessment:** Major essay (50%), minor essay (30%) and seminars (20%).
The global community is faced with the collision between obligations to protect human rights and the environment. Environmental degradation is on the increase while, simultaneously, we are witnessing a growing demand to meet human rights obligations. Both these phenomena necessitate a re-think of the way human / environment nexus. This unit of study addresses the diverse and complex interaction between human rights and the environment. We examine whether human rights can be secured in degraded or polluted environments. We consider whether the aims of human rights and environmental protection complement or contradict one another. The course deals with the human rights and the environment through a series of lectures seminars.

MARS5001 Coastal Processes and Systems

Credit points: 6 **Session:** Semester 1 **Classes:** One 2 hour lecture, one 1 hour tutorial, one 3 hour practical per week for 6 weeks **Assessment:** Assignment, presentation and quiz (100%).
This unit of study explains the major coastal processes and systems of relevance to coastal zone management. These include rocky coasts and bluff; beaches, barriers and dunes; and estuaries and inlets. The interactions between these processes and systems that are of most

relevance to coastal management are highlighted, including coastal hazards such as beach erosion, dune migration, bluff retreat, coastal flooding and inlet closure/opening. Anthropogenic impacts are also analysed. The unit is presented in lectures and field excursions, the latter enabling each system to be examined first hand.

MARS5006 Coral Reefs, Science and Management

Credit points: 6 **Session:** Semester 1 **Classes:** University base delivery: prefield trip tutorial (1-hour), four lectures (1-hour each). Field based delivery: seven lectures (1-hour each), four seminars (1-hour each), two tutorials - individual consultations to develop concepts in research (1-hour each), independent research and oral presentation (40-hours). **Assessment:** Written assignments: essay and project report; oral presentations; seminar and lecture participation (100%).
This unit provides an in - depth overview of the key biological and non-biological processes that make up coral reef ecosystems. There is a focus on the biogeographic, oceanographic and physiological processes underlying the integrity of global tropical reef systems. The Great Barrier Reef is used as a case study to explore emerging concepts on the influence of natural and anthropogenic processes on the integrity of global reef and lagoon systems. Learning activities will include a series of background lectures and research seminars and tutorials in the development of a major research project. A major aspect of this unit is an independent research project conducted under the supervision of the course instructors. The unit concludes with a series of oral presentations based on student research. Assessment tasks will consist of one essay, essay topic presentation and a research project report and presentation. The curriculum in this unit is based on current research and a course book will be provided. This is a field intensive course held at One Tree Island Research Station or Heron Island Research Station. The course is ex-Gladstone Queensland and students are expected to make their own way there. This unit will be run over 6-8 days and there will be an additional course fee for transport, food and accommodation, expected to be $700.

MARS5007 Coral Reefs and Climate Change

Credit points: 6 **Session:** Semester 1a **Classes:** University based delivery: Prefield trip tutorials and lectures. Field based delivery: Lectures, seminars and tutorials. Individual consultations to develop concepts in research, independent research and oral presentation. **Assessment:** Written assignments: essay and project report; oral presentations; seminar and lecture participation (100%).
This unit provides an in - depth understanding of the key geological, oceanographic, biological and economic factors effecting global climate change and coral reef response, with specific reference to the Great Barrier Reef. Predictions of worst and best case scenarios for the future of coral reef systems are discussed in the context of the latest science, and in light of how this science should underpin future management strategies and policy. Learning activities will include a series of background lectures and research seminars, and tutorials on the development of a major research project. A major aspect of this unit is an independent research project conducted under the supervision of the course instructors. The unit concludes with a series of oral presentations based on student research. Assessment tasks will consist of an essay, a research seminar, and a research project report and presentation. This is a field intensive course held at either One Tree Island or Heron Island or Orpheus Island Research Stations and there will an additional course fee for transport, food and accommodation.

PHYS5031 Ecological Econ & Sustainable Analysis

Credit points: 6 **Session:** Semester 1 **Classes:** 2-hour lecture and 1-hour tutorial per week. **Assumed knowledge:** A three year Bachelor's (pass) degree with some quantitative work, such as economics, science or engineering. **Assessment:** Major essay, tutorial summary, and course compilation diary (100%).
This unit will introduce selected recent topics from Ecological Economics, such as concepts of sustainability (definitions); comparisons with environmental economics, intergenerational discounting; time and equity in the climate change debate; valuing the environment; links between theories of well-being, consumerism and environmental impact; and cost benefit analysis. The unit sets the scene for the more detailed and specific units PHYS 5032, PHYS 5033, and PHYS 5034.

PHYS5034 Life Cycle Analysis

Credit points: 6 **Session:** Semester 2 **Classes:** 2-hour lecture and 1-hour tutorial per week **Assumed knowledge:** A Bachelor's degree with some quantitative work, such as economics, science or engineering. Basic knowledge in mathematics is desirable. **Assessment:** Major essay, seminar presentation and course diary compilation (100%).
This unit of study will cover the areas of the philosophy, techniques, applications and standards of Life-Cycle Assessment (LCA). It will include Process Analysis, Input-Output Analysis and Hybrid Analysis. Current LCA tools will be discussed. Case studies and business applications as well as global standards such as the GHG Protocol for accounting for scopes 1,2 and 3 emissions and ISO standards will provide a context. Students will also benefit from also enrolling in PHYS5033 for a sound understanding of input-output based Hybrid LCA methods.

RESP5001 Integrated Environmental Practice

Credit points: 6 **Session:** Semester 1, Semester 2 **Classes:** Four 4-hour lectures and two 4-hour laboratory classes per semester **Assessment:** One research proposal, One literature review and one oral presentation (100%)
This unit will provide an opportunity for students to synthesize and draw conclusions from their coursework experience and learning, and to enable them to revise and/or develop the necessary skills for engaging with environmental research as part of their intellectual and/or professional growth. The unit focuses on skills in cross-disciplinary problem identification and the use of integrated analysis to address environmental challenges. Other skills include critical reading and critical writing, undertaking a literature review, understanding how research is conducted and published, library search techniques, use of referencing systems like EndNote, and matters relating to intellectual property and authorship.

RSEC5432 Environmental Economics

Credit points: 6 **Session:** Semester 2 **Classes:** 2x1-hr lectures/week commencing week 1, 1x1-hr tutorial/week commencing week 2 **Assessment:** Report and presentation from the practical experience in environmental economics (20%), one (1 hr.) mid-term exam (30%), and two hour (2 hr.) final exam (50%).
The unit provides theoretical and empirical background necessary for a resource economist to be able to successfully function when faced with various environmental problems. The unit investigates economic aspects of a range of environmental issues. The studied concepts are exemplified with environmental problems related to agriculture (soil salinity, algal blooms, overgrazing etc.) as well as with environmental problems typical to Australia. The guiding economic themes are: competing uses of the environment / externalities, market failure, the importance of property rights, optimal allocation of pollution abatement, and the processes for making choices relating to non-market goods. Some social issues with environmental impacts are studied through exploration of the problems of population size and distribution, economic growth, and environmental regulation.
Textbooks
Perman, R., Y. Ma, J. McGilvray and M. Common. Natural Resource and Environmental Economics. Pearson, 3rd Ed. 2003

WILD5001 Australasian Wildlife: Introduction

Credit points: 6 **Session:** Int August **Classes:** Intensively taught unit, the remainder of the unit will involve personal study and project activity. See the Wildlife Health and Population Management website for dates. **Assessment:** Assessments for each unit may include practical work, field studies, student presentations and written reports (100%).
This unit of study provides an introduction to the wildlife of Australasia, an overview of the present status of that wildlife, and an understanding of both conservation problems and management solutions. Issues in wildlife management are exemplified using a broad range of vertebrate species occupying different environments. Emphasis is placed on providing students with a coordinated and interdisciplinary approach to wildlife health and management, and on developing expertise in recognising and solving a broad range of problems in field populations. The unit integrates lectures, practical work and supervised study, and offers students the opportunity to work through real-world wildlife conservation problems relevant to their individual backgrounds.

WILD5002 Australasian Wildlife: Field Studies

Credit points: 6 **Session:** Int Sept **Classes:** Intensively taught unit. See the Wildlife Health and Population Management website for dates. **Assessment:** Assessments for each unit may include practical work, field studies, student presentations and written reports (100%).
This unit of study provides a first-hand introduction to the wildlife of Australasia, a practical overview of the present status of that wildlife, and an understanding of both conservation problems and management solutions. Issues in wildlife management are exemplified using sampling and diagnostic methods on a broad range of vertebrate species occupying different environments. The unit follows on from WILD5001 and provides practical experience via a five day field trip at the university farm "Arthursleigh" near Marulan NSW.